STEPPING STONES

RICHARD B. OWEN
WASHINGTON, D.C.

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A RELIABLE TREATISE ON INVENTIONS WANTED

COMPILED WITH A VIEW TO THE PRESENT DEMAND

BY

RICHARD B. OWEN

(Bachelor of Law)

U. S. AND FOREIGN PATENT LAWYER

OWEN BUILDING, 620-22 F STREET N. W.
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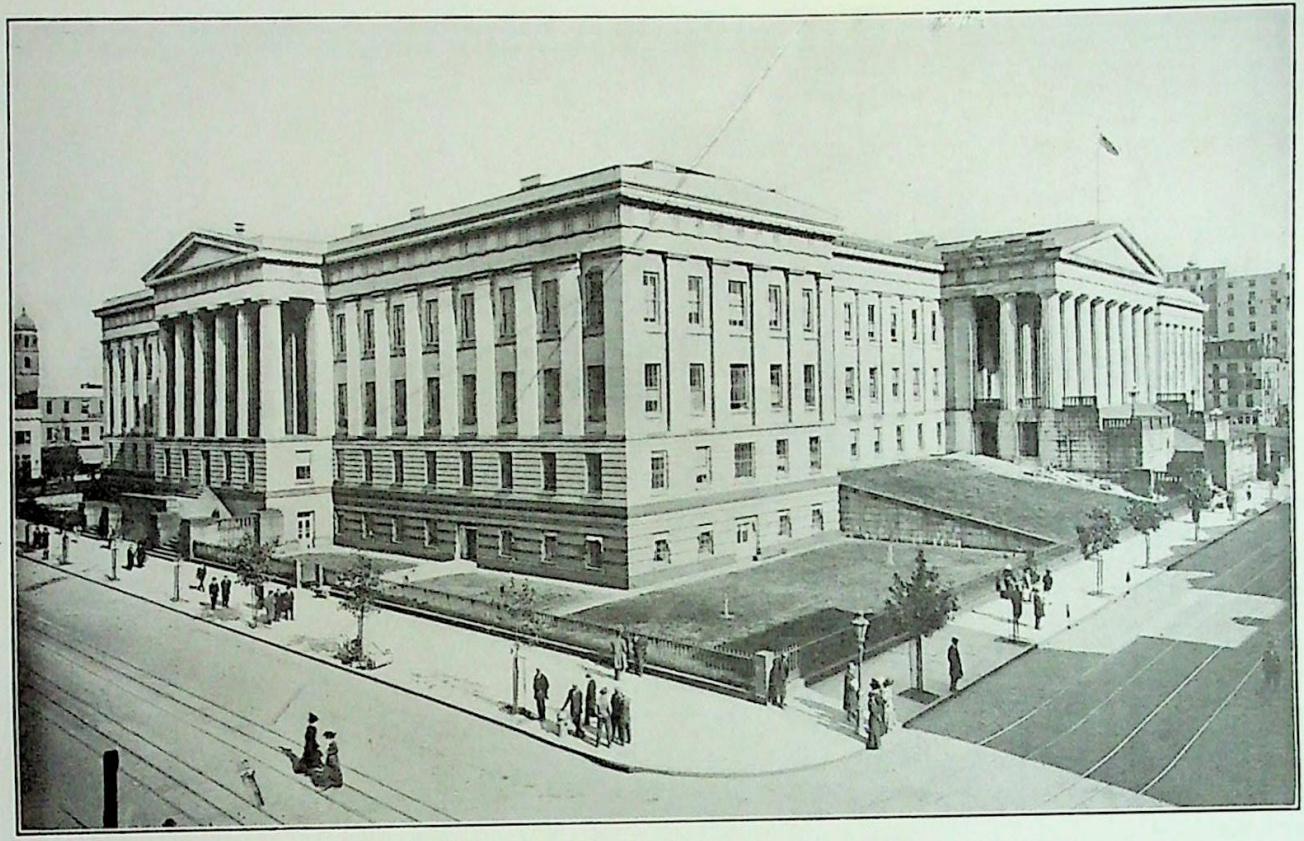
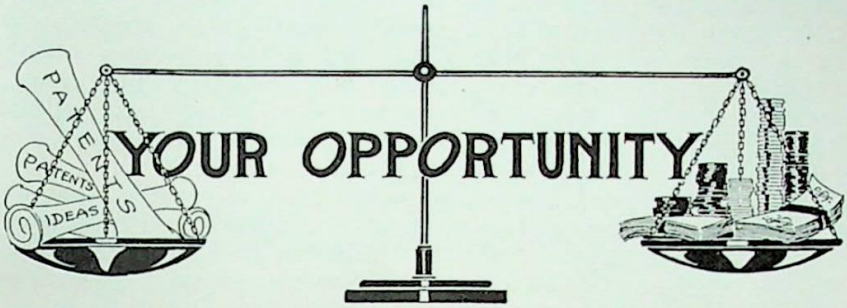


U. S. PATENT OFFICE

THE ARTICLE STARTING ON PAGE 3 WAS WRITTEN BY HON. EDWARD B. MOORE, FORMERLY THE HEAD OF THIS DEPARTMENT OF THE GOVERNMENT



"WE ARE THE GREATEST INVENTIVE NATION IN THE WORLD. AMERICAN INVENTORS HAVE DONE MORE FOR THE COMFORT OF MANKIND AND FOR THE PROSPERITY OF THE WORKER ON THE FARM AND IN THE FACTORY THAN THOSE OF ANY OTHER PEOPLE. MANY INVENTORS HAVE ACCUMULATED GREAT FORTUNES, WHILE THOUSANDS UPON THOUSANDS OF OTHERS HAVE BEEN PLACED IN CIRCUMSTANCES OF GREATEST COMFORT."—LESLIE'S WEEKLY.

"IN THIS CONNECTION IT IS STATED ON GOOD AUTHORITY THAT THERE ARE OVER ONE HUNDRED AND SEVENTY-FIVE PATENTS IN THE UNITED STATES PAYING THEIR OWNERS UPWARDS OF ONE MILLION DOLLARS A YEAR; NINE HUNDRED PAYING MORE THAN $500,000 A YEAR, AND TEN THOUSAND OR MORE WHICH NET ANNUAL INCOMES OF BETWEEN $50,000 AND $100,000. . . . THE ELEMENT OF LUCK HAS BEEN LARGELY REMOVED. . . . NO BUSINESS OFFERS A GREATER POSSIBLE CHANCE OF MONETARY REWARD."—OPPORTUNITY.

THE FACTS MENTIONED IN THE TWO ABSTRACTS ABOVE ARE ABSOLUTELY AND INDISPUTABLY TRUE. THEIR PUBLICATION IN THE MAGAZINES NAMED (TWO OF THE GREATEST, MOST RELIABLE, AND INFLUENTIAL IN THIS COUNTRY) SIMPLY SERVES TO EMPHASIZE THEM. THINK OF "THOUSANDS UPON THOUSANDS" THAT FIND THEMSELVES "IN CIRCUMSTANCES OF GREATEST COMFORT." THINK OF OVER ELEVEN THOUSAND PATENTS IN THIS COUNTRY THAT PAY OVER $50,000 PER YEAR. HOW MANY THOUSANDS PAY OVER $10,000 PER YEAR—OVER $1,000 PER YEAR? HOW MANY BRING NO YEARLY INCOME, BUT ARE SOLD OUTRIGHT FOR LARGE SUMS?

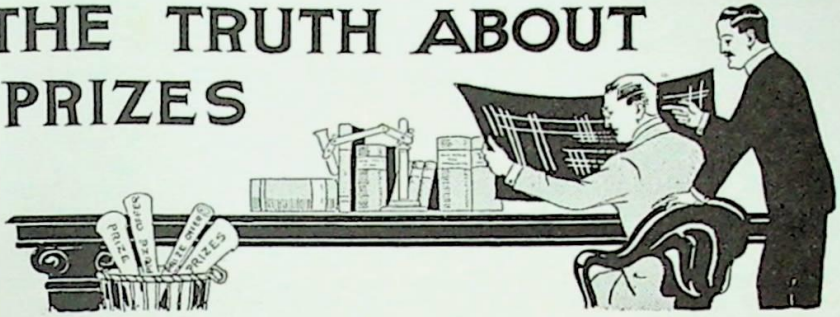
IF THOUSANDS OF OTHERS SUCCEED IN THIS IMMENSE FIELD, THAT IS OPEN TO ALL, WHY CAN'T YOU? YOUR

CHANCE IS AT LEAST EQUAL TO THEIRS—PERHAPS FAR BETTER. YOU NEED NOT BE A GREAT GENIUS; YOU NEED NOT BE A PRODIGY. YOU NEED NOT BE ONE AMONG A FEW, AMONG A HUNDRED OR AMONG A THOUSAND, BUT ONE AMONG "THOUSANDS UPON THOUSANDS." TRULY, "NO BUSINESS OFFERS A GREATER POSSIBLE CHANCE OF MONETARY REWARD."

ONE EXPERIENCED IN THE PATENT BUSINESS, DAILY COMING INTO PERSONAL CONTACT WITH THE NEEDS OF MANUFACTURERS AND THEIR INDUSTRIES, SOON COMES TO KNOW OF THOUSANDS OF IDEAS WHICH, IF WORKED OUT NOW, IN A SATISFACTORY WAY, WILL FILL EXISTING DEMANDS VERY MUCH TO THE PECUNIARY ADVANTAGE OF THE INVENTORS. TAKING ADVANTAGE OF MY EXPERIENCE, TRAINING, AND KNOWLEDGE OF THE WORLD'S NEEDS AT THE PRESENT TIME, I HAVE PUBLISHED THIS BOOKLET IN THE HOPE THAT IT MAY NOT ONLY BE OF INTEREST TO YOU, BUT THAT IT MAY ALSO FURNISH YOU WITH SOME VALUABLE AND PROFITABLE HINTS. IT IS NOT TO BE CONFUSED WITH THE MERE LISTS OF INVENTIONS WANTED, PUBLISHED HAPHAZARDLY BY OTHERS, WHICH ALMOST INVARIABLY NAME INVENTIONS EASILY PATENTED WITHOUT REGARD TO THE COMMERCIAL SIDE OF THE IDEA, NOR IS IT TO BE CONFOUNDED WITH THE UNRELIABLE TREATISES DESIGNED SOLELY TO BRING THE SHEKELS INTO THE COFFERS OF THE PUBLISHERS BY RECOMMENDING THE "INVENTION" OF THINGS EASILY SOLVED AND PERHAPS ALREADY PATENTED. THIS BOOKLET HAS BEEN PREPARED CAREFULLY AND CONSCIENTIOUSLY, AND THE LIST OF INVENTIONS REFERRED TO AS BEING NEEDED WAS COMPLETED ONLY AFTER LONG AND THOROUGH STUDY AND DELIBERATION. EVERY POSSIBLE STEP HAS BEEN TAKEN TO INCLUDE NO INVENTION WHICH IS NOT ACTUALLY NEEDED AT THE PRESENT TIME, OR FOR WHICH A MARKET WOULD NOT EXIST, OR BE CREATED, IF THE INVENTION IS PRODUCED OR THE DESIRED IMPROVEMENT MADE. AS FAR AS POSSIBLE I RELIED ONLY ON MY OWN PERSONAL KNOWLEDGE. WHERE THIS WAS IMPOSSIBLE, THE OPINIONS OF RELIABLE AUTHORITIES OR THE STATEMENTS OF DEPENDABLE SOURCES OF INFORMATION WERE ACCEPTED.

WHEN READING THIS BOOKLET AND COMPARING IT WITH OTHERS SUPPOSEDLY OF A LIKE NATURE, KINDLY BEAR THE FOREGOING FACTS IN MIND.

THE TRUTH ABOUT PRIZES



MANY inexperienced inventors are inclined to lay a great deal or unnecessary stress upon "prizes," "rewards," etc., that are announced from time to time by those seeking publicity. This fact has been seized upon by patent solicitors who, through widespread advertising, have ruthlessly worked upon the cupidity of the unsuspecting by depending upon these prize offers as inducements to secure work—only too frequently long after the offers had expired. Great financial loss to inventors has resulted, both through the protection of ideas for which no market exists and also because the solicitors making these inducements are incompetent to render the services requisite to the proper preparation and prosecution of a patent application, the total or partial loss of the invention following. You are warned against employing any attorney depending upon prize offers in his literature or his advertisements to obtain your case.

It is a matter of common knowledge among experienced inventors and attorneys that very, very few of the offers of large sums of money as prizes, or rewards for the invention of a specified device are legitimate or even worth consideration. Occasionally a bona fide, worth-while offer is made, but nine times out of ten these propositions are advanced solely in order to obtain publicity or are instigated by attorneys themselves, and used by the latter in the manner before referred to. If made at all, they are so surrounded by conditions, impossible to overcome, that the "prize" can never be won.

Any attorney who is not strictly scrupulous about his professional standing can offer small sums of money, medals, certificates or other worthless trinkets to his clients; but of what value are such things compared with a good, strong patent on your invention, secured through a competent attorney—a lawyer—of professional standing? Then, again, any attorney can persuade small manufacturers to make laughable offers for some invention or other, but, then, large and prominent manufacturers in the same field would be more than glad to give you, in cash, a hundred or a thousand times as much, if your patent is taken out through a reputable attorney whose work is known to them and who has procured for you a successful patent—which could not be the case were you to rely for aid on an attorney of the foregoing class.

The greatest "Prize" anyone can get is a good, strong, loop-hole proof, protective patent that fully covers a good invention and is procured through a well-known, reliable patent lawyer in good standing. Such patents are prizes indeed, and are worth in cash from ten to several thousand times as much as so-called "patents" obtained

through the prize-offering class of attorneys. You are almost certainly foredoomed to absolute failure—to the utter loss of your invention, and all the profits resulting therefrom, which are rightly yours—if you place your work in their hands. The Patent Office is constantly warning inventors of this fact, and advising them to place their work in the hands of reliable attorneys.

Ask experienced inventors—in every community will be found people who have been "taken in"—"knockers," who, in spite of the fact that everything with which they come into contact during their existence is patented and earning a fortune for its producer, are still unable to see any good in patents, inventions, the Patent Office, its officials, the Patent Laws, attorneys or anything else connected with their mistake in carelessly selecting their attorneys. Question them, and it is a hundred to one they lost a valuable invention by going for help to an unprofessional, prize-offering solicitor who has no interest in the invention other than the fees received for his blundering services. I have in my correspondence files letters from many clients who made these mistakes first, but have had perseverance enough to laugh at their first losses and try the services of a reputable attorney—one personally interested in their success and in the proper protection of their inventions—with the highest degree of success.

These prize offers usually go hand in hand with "free search coupons," green and red "certificates," full of catch phrases and pretending to be something entirely different from what they really are, "bonds," "congressional references," and similar pitfalls for the unwary.

Expressing the matter still differently—I do not advise any inventor to give much, if any, attention to prizes, or rewards even if legitimate and bona fide. If an invention is good enough to win a prize of, say, $10,000, it is worth many times more than that amount, and, if properly handled and protected through a competent patent lawyer, will easily produce what it is worth. The prize should be regarded as an incidental, and collected as such.

It is not my intention to convey the impression that there is no such thing as a legitimate prize offer—I simply want to warn you against prizes offered by attorneys, those instigated by attorneys, and those not made in good faith by anyone but seized upon by certain attorneys and misleadingly used by them. When prizes worthy of consideration are announced they are invariably brought to my attention and I waste no time communicating them to my clients.

To you who are interested in this subject or are about to select an attorney to handle a valuable invention in any field the following items concerning prizes, now being advertised, by other attorneys, will be found highly instructive.

Some years ago the government of New Zealand offered $60,000 for a successful machine that would reduce the cost of New Zealand hemp. This offer is still advertised by attorneys, although it expired November 30, 1912. There is no doubt about the immense value of such a machine even now, but I can hardly see the use of patenting such a device in the United States.

The president of a telephone company in a small New England town once stated that, in his opinion, a telephone repeater or a quadruplex corresponding to the then existing telegraph repeater or quadruplex would be worth $1,000,000. This became distorted into a prize offer which is still advertised occasionally, although several years ago Major Squier, of the U. S. Army, accomplished this very thing. He not

only failed to receive $1,000,000, but he actually gave his rights to the public.

The offer of $10,000 for an automatic train control or train stop expired July 1, 1913. No award has ever been made of this prize. A successful, practical invention of this nature, however, would be worth much more than the prize.

The Great Western Sugar Company of Denver, Colorado, offered $10,000 for the "complete solution of a practical Sugar Beet Puller and Topper." This offer expires March 1, 1915. I am in a position to furnish more information on this subject.

Upon investigating a prize offer in connection with a device to mark oyster shells I received the following communication:

NORTH ATLANTIC OYSTER FARMS, INC.,
40 Central Street.
Boston, Mass., August 20, 1914.

Mr. Richard B. Owen,
Patent Attorney,
Owen Building, Washington, D. C.

Dear Sir: In reply to your letter addressed to the Sealshipt Oyster System will say that some two years or more ago a prize offer was made by the Sealshipt Oyster System for an invention for marking shell oysters, but this matter has long since been closed.

It is evident that some patent attorneys in Washington are using this very old offer in their lists which they are sending out to the public, as we are constantly receiving inquiries from people concerning this matter.

We are in no way interested at the present time in a device of this kind.

Yours truly,
North Atlantic Oyster Farms, Inc.,
By F. W. Brigham, Treasurer.

The old Sealshipt Oyster System went through bankruptcy and was reorganized under the name of the North Atlantic Oyster Farms, Inc.

According to information furnished to me by the Fourth Assistant Postmaster General no rewards are to be given to postal employees during the current year, the advertised offers relating to the law of the fiscal year 1913-14.

A prize which was, and is still, given wide publicity is that of $10,000 offered by the "Society of Motor Manufacturers and Traders, Ltd.," of England, for a fuel for internal combustion engines to take the place of gasoline. This competition closed September 30, 1913. In a recent letter to me the Secretary of the Association states: "it was not possible to award this prize, as nothing to meet these conditions was produced. The time for entries has long since closed, but a Committee remains in existence which would be prepared to look into any claims for producing in this country a satisfactory substitute for petrol."

The Royal Automobile Club of England was also going to organize a similar competition with a prize likewise of $10,000 but, according to the Secretary, "the matter did not mature," widespread advertising to the contrary notwithstanding.

There is in existence a bona fide offer of $50,000 for an aeroplane flight across the Atlantic Ocean in 72 consecutive hours. The offer was made by "The Daily Mail" of London, England, the flight to be held under the auspices of the Royal Aero Club of the United King-

dom. There is no aeroplane now in existence known to be capable of making such a flight. The invention of such a machine would prove well worth while.

Due, doubtless, to the chaotic conditions in Europe, I have been unable to obtain definite information concerning a prize of 1,000 francs ($163) offered by the French "Accidents to Workmen Assurance Association"; a prize of 25,000 marks ($5,950) for an electric miners' lamp by large interests in the Dortmund District in Germany; or an offer of £20 ($100) made by the Royal Society of Arts of Great Britain for portable apparatus for mine rescue work.

The French Academy of Sciences offers 100,000 francs ($20,000) for a cure for Asiatic Cholera.

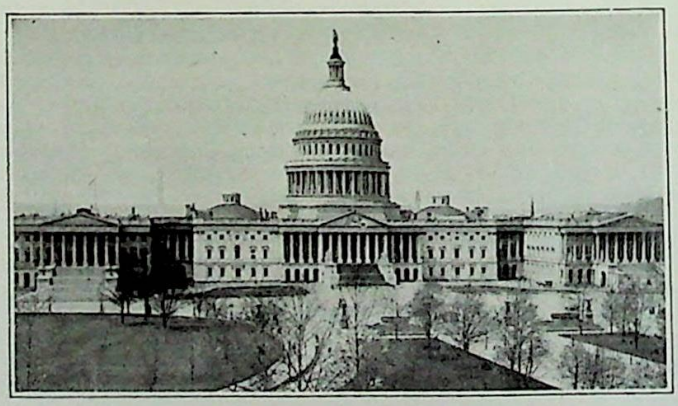
A gold medal (the Magellanic Premium founded in 1786 by John Hyacinthe de Magellan, of London) is annually awarded by the American Philosophical Society of Philadelphia "to the author of the best discovery, or most useful invention relating to navigation, astronomy, or natural philosophy (mere natural history only excepted)."

It has been advertised that the International Association of Recognized Automobile Clubs has offered a prize of $100,000 for a fuel suitable for use as a substitute for gasoline. I am informed, however, by the chairman of the Executive Board of the American Automobile Association that the plans of the International Association were never entirely consummated and that the European war has put the proposition entirely out of the question.

For some time past the National Association of Tanners has offered a prize of $100 "for a fool-proof accident prevention device for union splitting machines." The Executive Secretary writes that this offer "is still in force and will be awarded when such device has been approved and adopted by the accident committee of the Association."

The Republic of France is said to have offered a total of $100,000 in prizes for safety devices and other improvements connected with flying machines.

Another offer much advertised is that supposed to be made by the Louisiana Sugar Planters Association. In a recent letter Mr. Dykers, the Secretary, states: "The reward you refer to consisted of $2,000.00 and was offered nearly twenty years ago. It has long since lapsed."



U. S. Capitol

The Future Progress of Invention

By Hon. Edward Bruce Moore, Former Commissioner of Patents.

(From the New York Times.)

THE age of invention has just begun to dawn. The accomplishments of the last half century, while marvelous almost beyond conception, will not begin to compare with what will be done in the next half century.

I base this conclusion upon a definite knowledge of what is being done at the present and an appreciation of the great world-scope that invention is assuming. There is no evidence of a waning of inventive genius, while greater stores of knowledge, better trained hands, and both these in vastly greater numbers are being brought to bear in the field of invention.

The number of patents applied for, and the number granted, at the Patent Office last year was greater than at any time in its history. With the increased number THERE IS NO DECREASE IN THE INDIVIDUAL IMPORTANCE, but merely an evidence of increased industrial activity that DEMANDS the article patented.

There are periods of activity and depression along certain lines of industrial art.

This does not mean, however, that any line of machinery is ever made so perfect that no further inventions will follow, for there are as many patents issued today for the improvement of plows as at any time in the history of the world; and the plow in the form of a forked stick was among the first tools invented. There are, however, certain lines of great activity at present and in the near future. Electricity offers an unlimited field, and the number of patents upon it is without end, while the flying machine is but beginning to show its possibilities. Wireless telegraph and telephone are just being heard from, while at any time a great basic principle, like that of the Bell telephone, may be discovered that will open up new vistas.

The people of the United States have gained more than any other nation from their inventions. These have enabled them to enter the markets of the world and force out competition in many grades of machinery. The patent laws of this country have been a greater protection to the inventor than those of any of the other nations, and are being universally adopted. Such treaties are now being arranged by the State Department of China and all the countries of South America. Japan is but just finding that her people have the same inventive mind that is shown in America.

The awakening of new minds and new nations is going to bring on renewed activity and competition, and matters will go forward with a still greater rate. World's fairs have done much to make this activity world wide, and the promise is that our children will live in a world that we would not recognize.

The world would welcome a telephone system which would operate

successfully beneath the sea, connecting the opposite shores of the great oceans.

The scratching sound produced by the graphophone might be obviated by an invention which would operate without the contact of the stylus with the record.

The gigantic harvests of wheat and corn produced in this country have been successfully handled by the multiplicity of farming implements now in use, but the great cotton fields of the South are still awaiting a cotton harvester capable of being simply driven through the cotton field and harvesting the cotton without waste. Numerous inventors claim to have produced such a machine, but none as yet has come into general use.

Washington, in common with other cities, has an ordinance prohibiting the production of smoke by boiler furnaces, and while there are many patents having this object in view, the results, judging from the number of prosecutions, followed by assessment of fines, indicate that the Capital of the United States and the remainder of the world are still waiting for a smoke preventer.

The breaking of lamp chimneys, incident to the strain of unequal heating, offers a field for the invention of a glass capable of stretching without breaking. Many have sought, as yet in vain, to produce a flexible glass able to stand the same rough usage as sheet metal. The art of making the malleable glass, as known to the ancient Egyptians, has never been revived.

The rapid exhaustion of our timber, especially such as is consumed in the manufacture of wood pulp for paper, makes desirable a cheap and suitable substitute.

A flameless gun, to follow the soundless one recently invented by Mr. Maxim, would render impossible the detection of an enemy. Such a weapon would have a great effect on future tactics.

Safety devices for preventing accidents in mines, on shipboard, and on railways seem to be much needed. Stronger rail fastenings, rail joints, and a substitute for wooden ties must be found if our railways are to handle the constantly increasing weights imposed upon them by the expanding traffic of the country.

So rapidly have our coal fields been worked that in a few years it will be necessary to find some other source of heat. In order to utilize the heat of the sun, now going to waste, attempts have been made to concentrate the rays, by the aid of great systems of mirrors, upon a steam boiler, which would supply steam to an engine. This has been accomplished upon a small scale.

Substitutes for india rubber and leather would find an important place in the arts.

A method of producing electric energy directly from the combustion of fuel has engaged the attention of many inventors, among them Mr. Edison, who, however, has not brought the invention to the point of commercial success.

One of the great items of expense in running an automobile is the rapid wear of, and constant injury to, the pneumatic tires. Many attempts have been made to produce a satisfactory spring or cushion tire which will outwear, be free of punctures and blow-outs, and possess all the resiliency and other qualities of the pneumatic tire. A storage battery that will render a machine capable of a run of 100 miles is still anxiously sought.

The Future

By Thomas A. Edison.

(From the New York Times, and Other Interviews.)

UNDOUBTEDLY, the next great invention will be the commercial development of some new and more economical form of energy, probably the mak ng of electricity direct from coal. Scientific discoveries are coming thick and fast. The whole earth is a vast storehouse of undiscovered energy. Wonderful things are being done experimentally. Whether they can be done practically is another matter. The immediate motive power of the future will be power generated without steam. Now, to generate electricity in any great requirement of power, we have to burn coal to make steam to run the dynamo. There 's great waste in this process, and many persons are at work to eliminate the making of steam. The next step is to generate electricity direct from coal. Coal is an accumulation of the sun's heat, and the power is unquestionably there. We get electricity from zinc and iron direct. Why not from coal? Perhaps some day we may get power direct from the sun's rays as they reach the earth.

We are only at the beginning of knowledge. We are just beginning to emerge from the dog stage. All around us there are wonderful things going on of which we have not the slightest cognizance. Right through this room, at the present moment, there are probably passing right now a hundred wireless messages, and we do not know it. The Roentgen rays have been in existence since the world began, but we only heard about them a few years ago for the first time.

There are in the ether about us undoubtedly dozens of other undiscovered rays with wonderful properties, but we are not yet educated up to recognizing them. Some day, when we get a little further away from the dog stage, we may develop a new sense, a sixth sense, perhaps a dozen more senses, that will enable us to realize more fully the wonders of the world we live in.

But just now I am bothering with more practical problems. I am busy with tests of my storage battery. The increasing use of storage batteries will enable electric companies to find a market for their surplus current. Twice a day, for example, the New York subway and every other electric line requires a maximum of current for carrying people to and from their places of employment. In the interval not nearly so much current is required, but it is not possible to jump from minimum to maximum without developing surplus current. Satisfactory storage batteries will use most of this up.

The need for storage battery vehicles is imperative. There is absolutely no reason why horses should be allowed within the limits of any city. They are not needed. The pig and the cow are gone, and the horse is still more undesirable. A higher public ideal of health and cleanliness is working toward such banishment very swiftly. Soon we shall have in our cities decent streets instead of stables made out

of strips of cobble stones bordered by sidewalks. The worst use of money is to build a fine thoroughfare and turn it over to horses.

The next era will mark the most wonderful advance in science and invention that the world has ever known or hoped for. So vast will that advance be that we can now have scarcely any conception of its scope; but already a great many of the inventions of the future are assured. It is only of those which I regard as practical certainties that I speak here.

First: Within the next twenty or thirty years—and it will start within the next two or three—concrete architecture will take enormous strides forward; the art of moulding concrete will be reduced to a science of perfection, and, what is equally important, of cheapness; there will rise up a large number of gifted architects, and through their efforts cities and towns will spring up in this country beside which Turner's picture of ancient Rome and Carthage will pale into nothingness, and the buildings of the Columbian Exposition will appear common. But great expense will not attend this; it will be done so that the poor will be able to enjoy houses more beautiful than the rich now aspire to, and the man earning $1.50 a day, with a family to support, will be better housed than the man of today who is earning $10.

Second: Moving picture machines will be so perfected that the characters will not only move, but will speak, and all the accessories and effects of the stage will be faithfully reproduced on the living picture stage. This, of course, will not be done as well as on the regular stage, but its standard will approach very near to that; and the fact that such entertainment will be furnished for 5 cents will draw vast numbers of the working classes. The result will be that the masses will have the advantage of the moral of good drama; they will find an inexpensive and improving way of spending the evening, and the death-knell of the saloon will be sounded.

Third: In perhaps fifteen or twenty years—depending on the financial condition of the country—the locomotive will pass almost altogether out of use, and all our trunk railways will be operated by electricity.

Fourth: A new fertilizer will spring into existence containing a large percentage of nitrogen. This will be drawn from the air by electricity, and will be used to increase the arability of the land. Even now this is done to a large extent in Sweden.

Fifth: All our water power will be utilized by electricity to an extent now almost unthought of, and will be used with great advantage, both industrially and for railroads.

Sixth: A successful aerial navigation will be established—perhaps for mails—and will achieve a sound, practical working basis.

Seventh: We shall be able to protect ourselves against environment by the use of serums and things of that sort, so that the general state of health will improve and the average span of life will increase by a large percentage. The grand fight which is being made against tuberculosis and cancer will reach a successful culmination, and those diseases will be entirely mastered.

Eighth—A new force in nature, of some sort or other, will be discovered by which many things not now understood will be explained. We unfortunately have only five senses; if we had eight, we'd know more.

Ninth: We will realize the possibilities of our coal supplies better,

and will learn how to utilize them so that 90 per cent of the efficiency will not be thrown away, as it is today.

Finally, let it be said, hardly any piece of machinery now manufactured is more than 10 per cent perfect. As the years go on this will be improved upon tremendously; more automatic machinery will be devised, and articles of comfort and luxury will be produced in enormous numbers at such small cost that all classes will be able to enjoy the benefits of them.

These are some of the inventions which the world is awaiting which it is sure of seeing realized. Just how they will be realized is what the inventors are working now to determine.

A Few Hints

By William Jennings Bryan.

(From his paper, "The Commoner.")

MEN eager to amass a fortune need not seek the same through the devious wiles of the "frenzied financier," nor the special privileges of the trust. The world wants a few things, and wants them so much it is willing to pay handsomely for them. There are three things badly wanted, and all you need to do to amass a fortune beyond the dreams of avarice is to provide the world with either of them. The Post Office Department will pay an enormous sum for a device that will safely catch and hold the mail bags thrown from swiftly moving mail trains. For years manufacturers of goods sold in bottles have been vainly looking for a bottle that cannot be refilled, and will pay an enormous sum to the man who can furnish it. The common lightning bug manufactures light without heat. The man who can discover the "how" of it and can furnish the world light without heat can trade the knowledge for more money than King Midas ever yearned for. Just any one of these three things, and you are eligible to the millionaire class.

Invention by Effort and Study

By Simon Deutsch, E. E.

MANY of our great inventions appear to have been the result of accident rather than of well-directed and persistent effort, and there has grown up a pretty well-defined impression that the inventor, like the poet, is born and not made. This theory has enough to justify it in the lives of many of our great inventive geniuses, and we have records of inventions which seem to have sprung, without any previous thought or training, full-fledged and fully developed, from minds gifted with unusual inventive faculties. But these accidental discoveries were, in a great many instances, the result of long study and work, and while the final achievement came suddenly and unexpectedly, it was really the culmination of experiments and effort stretching over years.

There is, and always will be, a certain element of luck, of accident, and of chance in invention, and there will be born men whose inventive faculties are much greater than those of the majority, but outside of a small number of well-known geniuses the greater bulk of our inventions come from unknown men and women toiling daily at their allotted tasks. Some of these are professional inventors who deliberately pursue this calling as a business, while others are working at various odd trades and industries, but with an eye to the chances of possible self-improvement through the invention of some labor-saving machine or novelty. There are industrial organizations whose employees, no matter how humble and poor, are encouraged to make inventions, and if any one of them conceives a new idea he is given every opportunity to develop it. More than that, he is helped by experts, and if the idea proves feasible, both credit and royalties are given.

In the last fifty years there have been over three and one-half million applications for patents, and over two and one-half millions of these applications have been granted letters patent. A little less than one-half of these, or about one million, were granted in this country.

* * * * * * * *

The profession of the inventor is one of the best and noblest of his day, and it benefits humanity as well as the individual inventor. Great minds, and many minds, are at work all the time in the field. The safest way is to make a specialty of one line and stick to it. There may be no reward for years, but if one is possessed of reasonable inventive faculties the results are bound to come. Often the greatest inventions, waiting for some one to discover and develop them, are lying close by. It may be in some article of furniture, a tool which we use constantly in our daily work, or an article of dress which we handle every day of the year. It is well to cultivate the home field first, and try to improve things with which we are most familiar, and not those of which we have only a vague knowledge.

The Inventor — Who He is and Why

By George Frederic Stratton.

IN the marvelous achievements in engineering and mechanics which have developed the methods of Tubal Cain into the astounding equipment and products of the great steel industry of today, which have superseded the hundred-oared galley of Cleopatra by the thirty-thousand-horsepower ocean greyhound, many of the greatest strides in the invention of machines and processes have been made by men who had genius without one iota of training. Often they have not the rudiments of education, and are without one existing example of the thing their minds were creating, to study, to emulate, to enthuse.

There's the puzzle! What psychological explanation can be made of the mind impulses of Stephenson, who evolved the locomotive at the same time that he was teaching himself simple arithmetic; of Arkwright, the barber, who thought out and perfected one of the most intricate and ingenious of machines—the spinning jenny—at a period when machinery and mechanical movements were practically unknown; of Morse, the artist, who turned from his beloved profession and devoted his life and his means to the invention of the instrumentation and installation of the electric telegraph; of Whitney, the law student, who invented the marvelous cotton gin; of Bell, the physician, who created the telephone?

There is an old axiom which, with a few others, requires rebuilding; or, better still, relegating to some antiquarian museum where age is sufficient qualification for a glass case: "Necessity is the Mother of Invention." The man who devised that was obsessed by a briefness which obliterated his meaning, or he was not an observer of inventors. Necessity has undoubtedly been an impelling and insistent motive for some inventions, but so broad and distinctive an appellation as "Mother of Inventions" is entirely destroyed by a very cursory study of the Art, the Profession, or the Trade—which is it?

Some other Mother must be sought. Thousands of useful and valuable inventions have been made by men as the result of hobbies or pastimes. The necessity of the article had no appeal to them. It was the—perhaps—instinct to invent—an instinct which is possessed in some degree by every man, woman, and child today, and has been so possessed since the men, women, and children of the Stone Age found that life meant effort. Watch the most unambitious man, who, after 50 weeks of routine in the most monotonous work, gets into a camp for two weeks. He is full of suggestions and ideas for overcoming the rough places. Impracticable they may be, and often unnecessary, but he is full of the instinct of invention. Watch the young wife, or the older one, continually rearranging her home equipment for better convenience or tastier appearance; partitioning a closet, planning a new window, transforming a dark corner into a tempting alcove. It is the instinct of invention.

Above all, watch the boy, from the day he enters primary school

until he goes under the discipline of a paymaster. Through every hour of the day he is planning some new way to do work, or to dodge it; to beat the other fellows in sports of skill or chance by some new movement or some new method of using an old plaything. The instinct of invention is strong in him and will stay by him—subdued, perhaps—until he dies. He may develop into a thoroughly bad man, or into a shiftless, improvident fellow, or he may become the President of the United States; but the instinct of invention never leaves him.

Yet, of all the great or little capabilities of man, or all his instincts, proclivities, ambitions, and desires, this one great impelling instinct—if I am using the proper term—of invention is the only one that has been left without any attempt at systematic training and development; that is, in the line commonly accepted as invention. Every other capacity of man, physical as well as mental, has its colleges, institutes, training schools or advisory mentors. There are cults, new thought, schools, -isms and -ologies to meet every phase of human action and human thought, except that of inventiveness.

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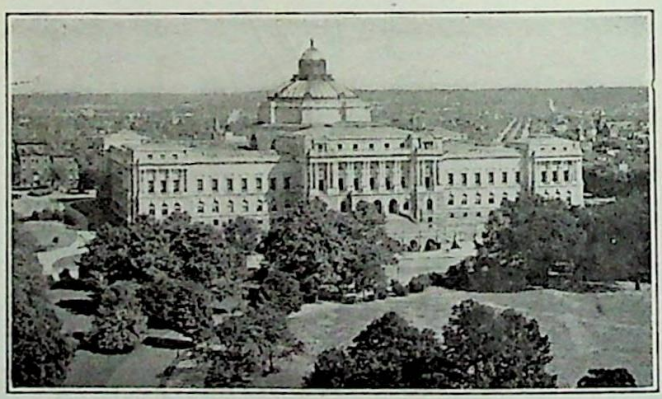
A patent attorney in one of the Mid-West cities showed me recently a record he had compiled of the occupations of his clients, and of others of whom he had been able to secure information in his visits to the Patent Department at Washington. His list gave nearly 1,000 names, and 65% were of men who had secured patents for inventions or improvements on articles entirely disconnected with their regular work.

That's where the inventor is a puzzle again. A sea captain invents a rock drill; a bookkeeper invents a combination vise and anvil; a machinist invents a hay rack for farm wagons; a sawmill operator invents an adjustable sash for hot-houses; a lawyer invents a steering gear for motor boats. Thousands of such incongruities can be found, but tens of thousands would prove no more conclusively than the few given that the inventor is an unknown quantity. You never know—he never knows himself—where he will break out next.



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HOW AND WHAT TO INVENT

By Richard B. Owen.

SOME people say that inventors are born; others, that they are made. It is undoubtedly the truth that some persons appear to be more "lucky" in hitting upon ingenious ideas, which bring them in dollars, than others, but is this a sign that they are "born" inventors? I think not. On the other hand, can inventors be "made"; This theory also seems to me to be unsound, for you can't make a man invent by telling him to think, unless he is also willing to see and recognize his opportunities, and the last-mentioned characteristic is what few human beings possess. EVERYONE IS AN INVENTOR. The only trouble comes in recognizing that fact, realizing that your opportunity is before you, that you have a fortune in your hands, that lifelong independence is within your grasp. You have probably passed by the chance many and many a time. In your work about the farm, or in the home, office or shop you meet difficulties every day. You use your brains, devise a simple little device that removes the difficulty, that enables you to do better, quicker work. You are satisfied—and proceed to forget all about your invention. It happens every day. Don't you see what invention is? It is only recognizing your ability, accepting your chance and following up your opportunity.

Some time ago a man was standing upon a street corner twisting a bit of wire. Finally realizing what he was doing he was about to toss it away when he stopped and examined it closely. Then an idea struck him. He recognized the possibilities in that bit of wire as he had bent it. He had it patented and is now a millionaire. His invention is a well-known form of wire paper clip or fastener now universally used. Was he lucky? No! He simply "CAPITALIZED HIS BRAINS." It is a proof of my contention that inventors are neither born nor made. Everyone is, by nature, an inventor.

For this reason it seems useless to tell you HOW to invent. Look around you. Find out what would help YOU. Some necessity, some convenience YOU desire; some improvement on an existing contrivance which you know is not perfect; and then get to work and provide it. You can rely upon it that your invention will be desired by others—the commercial world or the buying public—if it is desired by you. That is one of the best tests that can be applied.

Whether you are a born inventor or a trained one matters little in so far as the principles governing successful development of intangible ideas—in other words, the chief considerations to be kept in view in working out your invention—are concerned. These can

be easily grouped under two headings, viz.: (1) Utility and (2) Practicability, both of which are broad terms and include many points of lesser scope.

An invention to be easily promoted must possess utility; it must be useful. Such an invention when patented need not possess a ready market—its very usefulness will create a market. Whether it be a labor-saving invention, a time-saver, a novelty or an amusement device, its usefulness is first to be decided. There is always a demand that cannot be satisfied for well-protected ideas fulfilling this consideration. On the other hand, an invention lacking utility is foredoomed to failure for the simple reason that no market exists for things that cannot be used. Be useful and success will be yours.

Second only to utility is practicability. It cannot be given too careful thought, as there are many things, varying in different cases, that determine whether an invention is practical or not. For instance, the operative efficiency should be so developed and refined as to be thoroughly capable of producing the intended result, or performing the desired service, satisfactorily. Simplicity of structure must be borne in mind. In mechanical inventions there are always many ways (ranging from the simple to the complex) in which a given result can be obtained. Study out the simplest method consistent with operative efficiency, strength, durability, etc.

Ease of manufacture is another important point to have before you. There are many patented inventions which are absolutely valueless because they cannot be manufactured by any known means. If your invention is easily manufactured, you will find that manufacturers are equally easily interested. In this same connection it is pointed out that cost of making an invention goes hand in hand with simplicity and ease of manufacture—and cost frequently means a great deal.

Give the above suggestions primary consideration in working out your propositions. Do not make the mistake of over-estimating the importance of patentability during the creative stage of your idea. Make your invention useful—make it practical—then if it is not patentable you will have lost nothing but your time, but, on the other hand, if it is patentable you will be more than in a fair way of achieving success.

WHAT TO INVENT.

There are thousands of things to invent. The world is still young and nothing is yet perfect. In a recent interview Thomas A. Edison said that we are still in the "dog stage." "There is much ahead of us," said Mr. Edison. "We are coming out of the dog stage and getting a glimpse of our environment. We don't know—we just suspect a few things. Our practice of shooting one another in war is proof that we are animals. The make-up of our society is hideous.

"Communication with other worlds has been suggested. I think we had better stick to this world and find out something about it before we call up our neighbors. They might make us ashamed of ourselves. Not individualism, but social labor will dominate the future. Industry will constantly become more social and interdependent. There will be no manual labor in the factories of the future. The men in them will be merely superintendents watching the machinery to see that it does its work right. Less and less, man will be used as

an engine or as a horse, and his brains will be employed to benefit himself and his fellows."

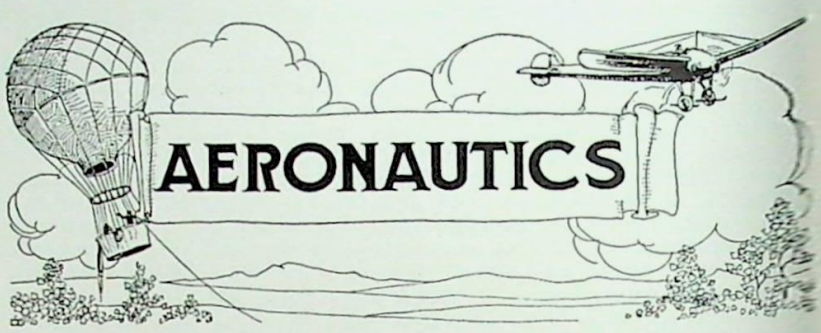
If such a thing is possible, it is more difficult to tell you what to invent than how to invent. The field is unlimited. Think of anything useful and practical; improve upon anything now in existence whether patented or not. You cannot go astray provided you studiously avoid freaks and invent for utility rather than for the sake of obtaining a patent. Nothing, no matter how apparently unimportant, is beneath your notice and thought—many of the most valuable patents cover "the little things that count." The most successful inventor is he who keeps his eyes open and sees; who starts his brain to work and acts. Wherever possible follow your own inclinations, your line of thought, your daily work, your "Hobby," your favorite recreation. You will usually get better results than attempting to accommodate your mind to some one else's line of thought.

Do not be surprised, therefore, if the list of needed inventions published herein, is of little service to you. It has helped hundreds, perhaps thousands, will doubtless help thousands in the future, and will most likely prove an inspiration and guide to you, but remember that your own efforts and study, your own foresight, are best adapted to you by nature.

In publishing this book I can do little more than scratch the surface of a limitless field. It is absolutely impossible to compile a satisfactory list of inventions wanted. In the first place no list can be complete. I could double, treble, quadruple, the size of this booklet and still have material at hand to go on and on indefinitely. In the second place only "hints" can be published, partly because of lack of space for details, but mostly because no man can tell exactly how to solve a problem or invent a device without actually inventing it himself. This last fact explains why even manufacturers wanting new inventions (see letters published elsewhere in my literature) cannot give definite information or details as to their desires. If they could, they could invent their devices without your aid.

IMPROVEMENTS.

It is pointed out that the large majority of successful inventions are improvements upon previous structures, processes, or compounds. It is but seldom that an invention new in basic idea is unearthed. There are few things entirely new. I mention that fact here in order to avoid all possibility of your being led to believe that there is nothing now in existence like many of the inventions referred to in the following list. If a manufacturer desires to purchase a patent upon an improved wrench, this does not mean that there are no other wrenches patented. If I tell you that a patent is wanted on an aeroplane, or a train-control system, or anything else, that does not mean that nothing has been done in those fields heretofore. A new and novel form of wrench, a better, more successful aeroplane, or an improved, more practical train control is really what is wanted. Unless your invention is something very unusual, do not let any attorney mislead you into believing that you are the first in your field—the chances are you are not. However, make an improvement, score an advance in the art to which your invention appertains, and financial success will be yours.



THIS is a field which is now receiving much attention, and which is but in its infancy. All kinds of improvements in flying machines are badly needed and in great demand, and any idea, even though it be of apparently small consequence, is quickly snapped up at a large figure if it is an advance in the art.

Not only is this the case, but the onward march of aviation is bound to change and upset many of our customs and habits of today and to radically modify so many other arts that field of invention is infinitely broadening. For instance, in commenting upon the great havoc a fleet of flying machines could create in time of war, Hudson Maxim, the great inventor of the Maxim gun, Maxim silencer, and many other well-known inventions, including Maximite and similar high explosives, said:

"What is the remedy? The answer is that, just as fire must be fought with fire, so must the flying machine be fought with flying machines. We must have our aerial navies of the latest, most efficient, and up-to-date patterns. We must have our trained and experienced veteran aviators. In the next great war, not only around our national frontiers must we have flying machines perched ready for flight, but the inland mountain height must be equally fortified and equipped. The new conditions will require new guns and new projectiles, new instruments for taking snapshot ranges, new instruments for observations and for making quick and accurate measurements of underlying areas, new photographic apparatus. Instruments will be wanted for determining the altitude and actual speed of the flying machine upon which they are carried, in order that, in rapid flight, explosive missiles, and particularly missiles containing inflammable materials, may be dropped at the right instant to strike desired points underneath. Allowance must be made for the forward travel of the projectile with the machine. A projectile dropped from an aeroplane traveling thirty miles an hour will travel forward forty feet the first second, while its drop will be only sixteen feet, and forty feet the second second, while its drop will be but thirty-two feet, and so on."

Mr. Maxim's views will give some idea of the possibilities in this field.

I have made a special study of aeronautics and have obtained several very valuable patents in this field. I am prepared to give applicants for patents in this art the very best services and attention.

It is recommended that applications be filed just as soon as possible after the invention is in such shape that a disclosure in practical form can be submitted to an attorney, for the field is so active that it is highly advisable that application be not delayed in filing.

1. GENERAL STRUCTURE: Perhaps the most radical advance in the art of aviation that can, at present, be foreseen is the provision of a machine that will do away with the long run at present required by all aeroplanes before they take to the air. No machine has as yet been devised that will rise direct from the ground or that can be made to remain stationary in the air. The next great improvement in this line will undoubtedly be the invention of a machine that will accomplish both of these results. How that can be done, however, is entirely problematical.

Perhaps the majority of accidents to aeroplanes result through the breaking of the wing structure. It is essential, of course, to a successful flying machine that the wing frame-work be comparatively light in construction, but the immense strain to which such a structure is put when a machine is traveling sixty miles an hour or more in a high wind necessitates much improvement from the standpoint of strengthening the wing, or the provision of some means by which flaws can be detected before the machine goes into the air.

2. AUTOMATIC CONTROL: The Wright patent covering the warping of wing structures and the Curtiss idea of providing the well-known type of ailerons used by the latter's machine were both distinct advances in the art of controlling aeroplanes, but the many accidents still occurring to these two types positively demonstrate that their controlling means still depend too much upon quickness of mind and the skill of the operator. There should be an automatic controlling device depending just as little as possible upon manual operation. Atmospheric pressure itself might be made to play a large part in the success of such an invention.

3. LANDING GEAR: There is much room for improvement in so far as landing gear of aeroplanes is concerned. Some types of machines use the original form of skid devised by the Wright Brothers. Others use rubber-tired wheels, and still others a combination of these two forms of landing structures. Neither is satisfactory, however, for a slight miscalculation of distance or speed on the part of the operator when landing will cause such a shock as to demolish either structure. Some form of shock-absorbing gear, or means for strengthening the present landing devices, should be devised.

4. FIRE PREVENTION: Fire in flying machines is usually caused either by a leaking gasoline tank, an overheated engine or exhaust pipe, or from flames or sparks emitted from the exhaust pipe and lodging in the frame-work or fabric of the machine. Danger from fire could apparently be entirely eliminated through careful design of aeronautical structures and the provision of safety devices wherever possible.

5. AERONAUTICAL INSTRUMENTS: At the present time no instruments are in existence that will enable aviators to determine accurately longitude, latitude, direction of flight or height above the surface of the earth when the machine happens to be above the clouds or otherwise out of sight of land. The aviators who are going to attempt crossing the Atlantic Ocean will depend upon keeping within sight of ships in order to maintain their bearing, as they will not be able to take a practical instrument for this purpose with them.

The following is an extract from an article recently published by "The Washington Post," under the heading "Aero Compass Fails":

"The attention of Capt. Chambers was first directed to the necessity of an aviator having some method of guidance when Capt. Paul W.

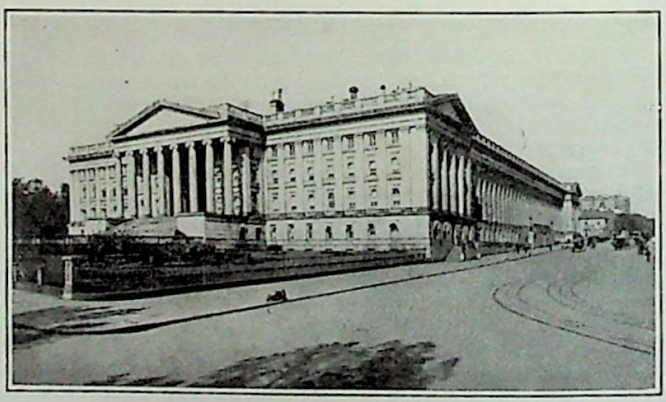
Beck, lost in the clouds a few days ago, landed in a strange place, and with disaster.

"At present, on every one of the army machines, there is a tell-tale, made of cord and attached to the horizontal dash-rail of the main skid. With this cord-like affair the aviator can tell whether or not he is making just the proper kind of turns, but he cannot tell whether he is going up or down, unless he happens to be in sight of the ground.

"The idea of Capt. Chambers, who is in charge of naval aeronautics, is to keep aeroplanes and dirigibles on their proper courses by means of a device similar to the mariner's compass. The ordinary mariner's compass is of little or no use to the aviator in the air, for the reason that the aviator cannot tell the extent of his drift after he loses sight of the earth.

"When Milling went into the clouds on his first trip yesterday his aeroplane was headed in a southern direction, and when he emerged from the same clouds he was traveling exactly north, although he explained when he landed that he was unaware of the change. The army is very anxious to obtain a compass that will overcome the present difficulty."

6. SAFETY APPARATUS: Realizing the importance of the development of safety devices in the field of aeronautics, the government of the Republic of France is said to have offered $100,000 in prizes for successful safety devices that prove advances in this art. Included under this heading can be provided not only automatic stabilizers, and controls, safety wing structures, etc., but also various mechanisms that might be devised in the way of safety apparel, that will minimize the danger of fatalities resulting from falls. Parachute structures, both on the machine and attached to one's clothing, would also appear to fall within the scope of this branch of the art.



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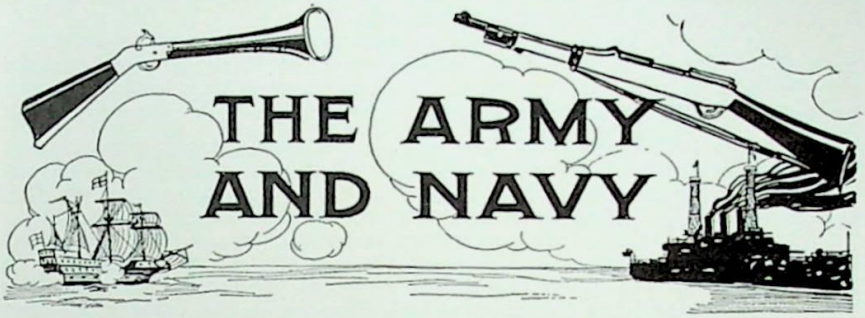


AS long as war is a possibility, one nation will continue to try to outdo its rival in equipping its army and navy with the latest improvements in the way of weapons, clothing, ammunition, transportation and communicating facilities, etc., in order to increase its efficiency up to the very last notch. Billions of dollars are spent every year by the various governments throughout the world in order to bring about this desirable result, and consequently many of these billions flow into the pockets of inventors.

7. LOCATING AIRSHIPS: The ease with which a flying machine high in the air can drop explosives into the camps of enemies or onto the decks of warships has been demonstrated so thoroughly that practically all nations are now seeking some means by which the position of an unseen airship can be definitely determined. Although search lights have been greatly improved in recent years they are not as yet capable of penetrating through the darkness a sufficient distance to quickly locate a machine high in the air.

8. AIRSHIP DESTROYERS: Some means should be devised whereby rapidly moving aeroplanes can be fought from the ground. Rapid fire guns must be improved upon so that they can be easily aimed into the air and easily transported. Some inventors are working upon means whereby aeroplanes and airships can be exploded or destroyed by means of Hertzian Waves.

9. PROTECTION FROM AERIAL MISSILES: If some one can successfully develop means for neutralizing the effects of missiles of all kinds dropped from flying machines onto battleships or into fortifications, it should prove to be an excellent commercial proposition. It might be possible to cause these missiles and bombs to explode before reaching their destinations, or it might be possible to prevent their exploding altogether.

10. EXPLOSIVES: Although properly belonging within the scope of chemistry, it is well to here point out that there is no doubt but what great advances are soon to be made in the development of explosives. Every advance in this field during the past has met with a neutralizing advance on the part of manufacturers of armor plate or with other provision on the part of various governments of some means of overcoming the added power of the new explosives.

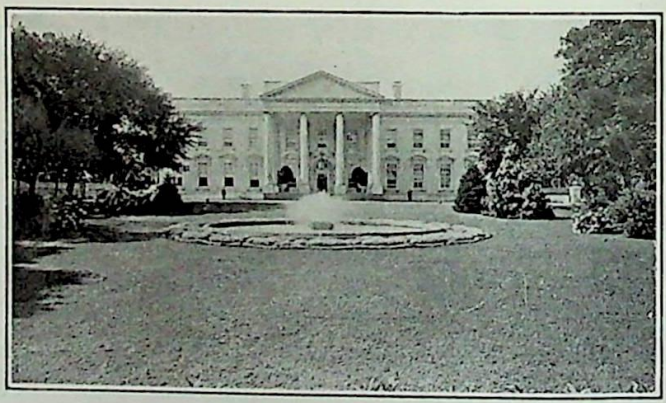
11. FIREARMS: The lives of our great coast defense guns and the large guns now in use in the navy are astonishingly limited. Use during one prolonged battle would be sufficient to seriously impair

the accuracy of these guns or render their continued use dangerous. No one has as yet been able to overcome this.

Since the modern invention of automatic rifles and pistols, no radical advance has been made in this field in spite of the fact that the smallest improvement is in much demand, this line having always proved a profitable one in which to work.

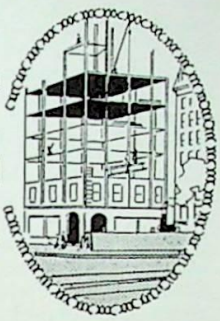
12. RANGE FINDERS: The United States Navy Department is constantly experimenting with new range-finding devices by means of which the distance between the gun and the target can be quickly determined. No absolutely satisfactory device has, as yet, been found. This is quite a problem when one stops to consider the speed with which the range has to be found in view of the fact that the ship upon which a range finder is mounted may be moving thirty miles an hour and the target might also be moving at an equal speed in a different direction.

13. DUMMY PROJECTILES FOR LOADING DRILL: In the coast artillery service there is considerable need for a suitable projectile of the dummy type that can be used in loading drill whenever the angle of the gun is high. Frequently coast defense guns and mortars are fired at angles of forty-five degrees or greater. During actual firing the projectile rests upon the powder charge, but during drill, when a dummy projectile is used, no powder charge is inserted. Hence, when the muzzle of the gun is raised the projectile is likely to slide backwards and, because of its great weight, break the breech mechanism. An improved projectile having practical mechanism permitting it to be readily inserted through the breech and quickly locked by expansion or otherwise so that it will be held in place, but at the same time be readily releasable and withdrawable at the proper moment, would undoubtedly find favor.



White House

BUILDING



INASMUCH as this is a field of invention into contact with which everyone comes to a greater or less extent, no attempt will be made to give a complete list of improvements that are desired in this line, even if such a thing were possible. Look around you and you can see many things that can be improved upon. It need, therefore, only be pointed out that in this day of rapid progress much money has been, and still can be, made developing new ideas along lines similar to those indicated below.

14. CONCRETE AND CEMENT WORK: In recent years much has been done in the way of constructing blocks, walls, and even whole buildings out of concrete. Concrete blocks of all shapes, sizes, and with all kinds of locking devices have been patented, and it is said that Mr. Edison has been working some time upon a means whereby a concrete house can be easily made in monolithic form. A plain block, without some kind of a locking joint, does not provide the strength, either lateral or longitudinal, that is required of this kind of work. The blocks that have been patented with interlocking joints are generally of such a nature that the joints cannot be readily moulded or cast, or if moulded or cast successfully, cannot be set up and locked together except by a thoroughly experienced and expert workman. Where walls or buildings have been moulded in one solid mass, the reinforcing of the structure has usually presented a problem which could hardly be handled by anyone short of a civil engineer.

These are difficulties which should be overcome, for there is no doubt but what cement and concrete are the coming building material for practically all purposes.

Improvements in various kinds of block, cement post, and other kinds of moulds are also in demand.

15. MACHINE FOR LAYING BRICK: There seems to be no reason why a successful brick-laying machine could not be developed. This machine would of course have to be provided with means, not only for laying the bricks, but also for applying the mortar thereto. A machine that would lay bricks in the common or ordinary "bond" as it is technically called, should not prove difficult to develop, although a much harder proposition would confront one if an attempt were made to provide a machine that will lay bricks in all of the fancier and less-used "bonds."

16. FIRE PROTECTION: Modern office buildings and other so-called fire-proof structures have comparatively little material therein that can be considered combustible, but at the same time no building

has ever yet been devised that can be considered absolutely fireproof or that would not be destroyed in a large conflagration. It would seem, however, that more attention should be given at the present time to means for extinguishing incipient fires or protecting present structures from fires within them.

These protecting means should, if possible, be entirely automatic in their operation and not depend upon the vigilance of an occupant of the building for their success. Automatic sprinkler systems of one kind or another have been provided for this purpose, but in actual service these sprinklers have not proved very efficient, for as a general rule they do not get into operation until it is too late for them to do any good. Practical improvements in automatic mechanism for controlling these systems should be provided, and also some means for increasing the amount of water which they direct upon the fire.

17. BUILDING AND HARDWARE SPECIALTIES: One of the most profitable fields for inventors today is in the provision of new hardware specialties, or improvements in existing devices in the building line. I am constantly receiving inquiries from manufacturers who are always on the lookout for something good of this nature that they can add to their present output.

After houses have been built some little time they are bound to settle to a greater or less extent or the window sashes perhaps warp, this being particularly true in the cheaper grade of structures. This results in the loosening of sashes, which rattle very distractingly whenever the wind blows. If the sashes or frame could be provided with some means for doing away with the rattling, the proposition should prove a good one.

Another thing that is wanted is some kind of a device that will relegate to the scrap heap sash-weights and cord, as at present used. These are entirely unnecessary, it would seem, and make it essential to provide window frames that are larger, heavier, and more expensive than they need be.

18. PLUMBING AND SEWERAGE: Sanitary plumbing fixtures are inventions of recent years and there is always a great demand for improvement. There have been many patents granted upon designs for wash basins and the like that have proved commercially lucrative. Improvements in self-closing faucets, stoppers for waste pipes, traps that can be easily cleaned or that will not become stopped up, water seals for sewer outlets, closet flushing apparatus, and the like, are all needed. Attention is also directed to the fact that in the ordinary flushing tank, as used today, much difficulty is encountered through leaking valves, and in those tanks using a rubber ball as a valve the ball has to be taken out and replaced periodically. This should be obviated.

Some sanitary but cheap method of disposing of sewerage in rural districts ought to also prove commercially successful.

19. SHEET METAL CULVERTS: Sewer and drainage pipes made of sheet metal have recently begun to come into common use. There seems to be some difficulty, however, in providing these pipe lines with water-tight joints. Quite a number of patents have been granted upon various kinds of connecting devices for the ends of culverts of this type, but most of these are either impractical because of their cost of manufacture or the difficulty of applying them, or else they depend upon bolts or screws or similar fastening means

for their efficiency. These bolts, screws, etc., rust away in a very short time, with the result that the joints become loose. It would seem that this problem is not a difficult one, but at the same time it is something well worth careful consideration.

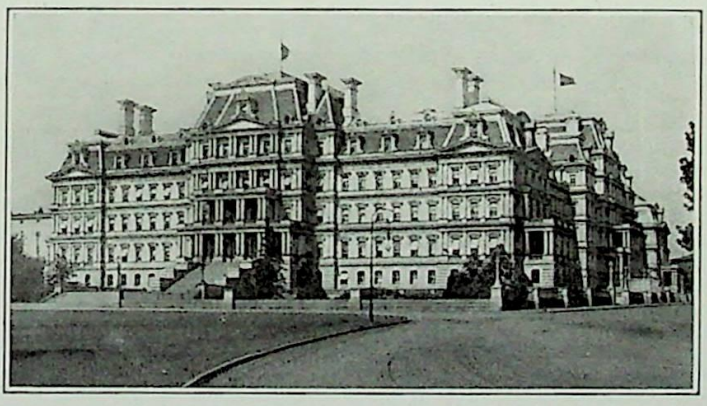
20. FIRE ESCAPES: Inventors have long been trying to develop some practical fire escape that can be absolutely depended upon in the emergency for which it is provided. Judging from the numerous impractical devices that have been patented, it would seem that comparatively little careful thought has been given to their efforts in this direction.

Stationary fire escapes as used on buildings do not, of course, normally reach to the ground, but end at the second story, from which point a ladder has to be lowered to the street. Some means which can be easily operated by anyone and which will not be affected by the weather so that it will become so corroded as to be useless or inoperative should be provided for lowering this ladder.

A good, simple, practical, portable fire-escape that can be carried in a suit case, or that is so low in cost that one can be put in each room of a hotel, is still to be desired.

21. ROOFING FABRICS: Low-cost roofing fabrics prepared in rolls, such, for instance as tar paper, slag roofing mixed with a composition on roofing paper of one type or another, and various similar fabrics have made fortunes for their inventors. There is still much room for improvement, however, as those who use these fabrics are aware. The cheaper materials cannot stand much wear and tear, and practically all of them are highly inflammable. Careful and painstaking study of this subject should prove profitable.

22. ELEVATOR SAFETY DEVICES: I have recently received a request from a large manufacturer for improved devices in the way of safety appliances for elevators. Anything that can be considered an improvement in this art, that will prevent elevators from falling, will prevent them from operating until the shaft doors are closed, or anything else in the nature of a safety apparatus will be gladly considered with a view to its adoption and purchase.



State, War, and Navy Building

CHEMISTRY

MANY experienced and successful inventors fight shy of everything partaking of the nature of chemistry, they apparently having the idea that this is a field in which technical knowledge and a thorough specialized education is absolutely necessary to success. Such, however, is not the case, for the term "chemistry" covers not only the more or less mystifying intricacies of that science, but also many things with which we come into every-day contact and which we do not ordinarily think of as being chemical inventions.

Industrial chemistry is a constantly widening field which is opening up great opportunities to those having the patience to experiment, or those level-headed enough to recognize the importance of even a slight step forward. The following is an extract of a lengthy article which recently appeared in "Electrician and Mechanic." The figures will prove astonishing. Any thoughtful man reading this article cannot but stop and consider the possibilities of careful and thorough work in this line.

"Chemistry aids the manufacturer who will listen to her teachings in countless ways. It substitutes a rigid control of progress for the guesswork and uncertainty of the rule of thumb. It increases the productivity of labor by supplying more efficient processes.

"In the sulphur mines of Sicily young boys called "carusi" climb with groans and curses for 400 feet, bearing in a stifling atmosphere 40-pound loads of sulphur ore upon their backs. In Louisiana, thanks to Frash, two concentric pipes are driven to the ore, a hot solution of calcium chloride is forced through one pipe to melt the sulphur which is then pumped to the surface through the other, at a trivial fraction of the cost of raising the ore in Sicily.

"In the old days of making paper the rags were piled in a heap, moistened and allowed to stand for weeks until fermentation had proceeded far enough to soften them. Now they are boiled with lime for a few hours. They used to be bleached by the slow action of the sun and dew as they were spread upon the grass. They are brought to better color now over night by bleaching powder. Cutting tools made from high speed steels multiply the output of the lathe and planer. The addition of 1 per cent of calcium chloride to the electrolyzing bath doubles the yield of potassium chlorate.

"Abraham S. Hewitt is authority for the statement that the Bessemer process has added $2,000,000,000 yearly to the world's wealth. By far the greatest portion of this increment has come through the economies which this process of steel-making has rendered possible in transportation.

"The classic work of Dr. Dudley as the head of the laboratories

of the Pennsylvania system has gone far to standardize railroad practice throughout the country. Few, even among railroad men, realize how greatly the whole community is in his debt. His specifications cover rails, soaps, disinfectants, oils for signals and for lubricating, paints, steel in special forms for every use, car wheels, cement, signal cord and every detail of equipment. He has made the transportation of life and property cheaper, safer and more expeditious by reason of his application of chemistry to the problems of railroad management.

"In a recent address Dr. Frankforter, voicing the opinion of every thoughtful chemist, said: 'The United States is the most wasteful nation in the world; wasteful in living, wasteful in manufacturing, and wasteful in conserving its natural resources.' So heedless and appalling is this waste that the mind trained in chemistry stands aghast. I have lately visited a southern lumber mill which burns 1,900 cords of wood a day in its incinerator. There are 200 such burners in the country, limited in destructiveness only by the amount of material sent them. From such wood chemistry is prepared to extract three gallons of turpentine a cord, 10 gallons of ethyl alcohol, or paper pulp to the value of $20. We waste each year 500,000,000 tons of coal and each day a billion feet of natural gas. With peat deposits fringing our entire eastern coast we pay $4 a ton for coal delivered on the bog. Beehive coke ovens flame for miles in Pennsylvania and excite no comment, while the burning of a $1,000 house would draw a mob. We fill the Merrimac River with wool grease, making it a stench, while the towns along its course buy soap and fertilizer and lubricants from Chicago, Chile, and Pennsylvania. We burn coal-tar in Massachusetts and import coal-tar colors at high prices from Germany. Over the great northwest we burn each year 5,000,000 tons of flax straw while we pay $40 a ton for imported paper stock from Norway. In the South 300,000 tons of paper fiber of the highest grade are burned with the cottonseed hulls to which it is attached or used with them to adulterate cattle feed. Cornstalks to an incalculable tonnage rot or are burned each year, while chemistry stands ready to convert them into feed containing 30 per cent of sugars on the dry basis, or into alcohol for light and power. Waste molasses is sold for three cents a gallon or dumped into the stream, while alcohol sells for 40 cents a gallon. Skim milk is fed to hogs or thrown away because no one has the enterprise to extract its casein, which is worth more than beefsteak for food.

"In the face of such conditions we still meet young men who would inform us that the day of opportunity is past. The truth is that opportunity is knocking not once, but insistently and long at every entrance to the chemist's laboratory.

"Nowhere is the earning power of chemistry better shown than in its ability to transform cheap raw materials into valuable and finished products."

23. ALCOHOL: The commercial demand for a way by which alcohol can be extracted more cheaply than it can be at present produced has been so great that the U. S. Department of Agriculture has recently begun to experiment in this line in an attempt to develop such a process. It is common knowledge that beets, potatoes and other similar substances as well as wood all contain much alcohol which can be extracted more or less readily. Up to the present time, however, it has not been shown that alcohol can be commercially produced at a price much, if any, less than fourteen cents per gallon. Adding the selling price and transportation expenses the result will be a price of about thirty cents or even more to the con-

sumer. This price would have to be reduced at least one-third before alcohol could hope to compete with gasoline, either for use in internal combustion engines or for similar consumption.

The selling price of alcohol would undoubtedly be materially reduced by finding some use to which the by-products of present processes of extraction could be put. This will be further referred to under paragraph 48.

Attention is also directed to the need for an improved process of denaturing alcohol. The government of the Republic of France offered a prize for such a process some time ago, and it is understood that this prize has not as yet been awarded.

24. BLEACHING AND DYEING COMPOUNDS: There are upon the market a number of chemical preparations which, when applied to various materials will bleach those materials quickly and perfectly. These compounds, however, are almost entirely controlled by various interests who, of course, charge large prices for their output. Consequently there is much demand for an improved compound that will not infringe those already patented and in use.

The same is also true of dyes. Cochineal dyes are very expensive, they being made from an insect known as the cochineal bug. Artificial dyes that will give the same colors and shades are in much demand. The same is also true of an artificial indigo. There is a dye of this character now on the market, but it is controlled by German interests who, having a monopoly of the present process, are in a position to charge just about what they please. An improved process that will overcome these conditions should be developed.

25. FERTILIZERS: The soil-enriching qualities of nitrogen are almost too well known to refer to in this connection. Many different fertilizers upon the market have been developed so as to carry as large an amount of nitrogen into the soil as is possible, and it is needless to say that many of these fertilizers have proved highly successful from the commercial standpoint. When, however, it is remembered that about seventy-seven per cent of our atmosphere is nothing but nitrogen, the wonder grows that no one has as yet succeeded in getting sufficient nitrogen into the ground to produce the wonderful results which expert agriculturists claim for this gas. Some means for withdrawing nitrogen from the air and holding it in a fixed state for a sufficient length of time to permit it to become absorbed by the soil would undoubtedly prove of incalculable value.

Fertilizers containing other substances that will enrich the soil and that can be manufactured and produced at a reasonable price are also much sought after and well worth consideration.

26. CEMENT: The commercial development of the substance commonly known as Portland cement has been of immense value in more arts than one. There is still, however, much room for improvement, not only in the process of manufacture, but also in the adhesive or binding qualities of the cement itself. There is also a big demand for a practical process or water-proofing substance for concrete structures.

27. FIRE AND WATER PROOFING: Chemical compounds or processes that will render cloth and fabrics of various kinds, woodwork and practically every other inflammable material, proof against either fire or water are in much demand.

28. DISCOLORATION OF STRAW HATS: Everyone is familiar with the tendency of straw hats to gradually become discolored while in use. If some one can develop a process to be used in the manu-

facture of straw hats that will prevent discoloration it would most assuredly be well worth his while.

29. INK: The production of a perfect indelible ink is an end sought in many trades. For instance, at the present time laundries mark their customers' goods with an ink, but it is claimed that that used is not permanent and is unsatisfactory in many ways. It is also understood that the United States Post Office Department has not as yet found a perfect ink for use in cancelling postage stamps.

For marking black objects a white indelible ink is also badly needed.

30. FUEL: It is claimed that our coal fields are rapidly becoming exhausted and that there is little or no hope of further beds being discovered in this country. It is therefore becoming more and more urgent that someone develop a new form of fuel or substitute for coal. Several attempts have been made to utilize the culm dumps which are found in large quantities in every mining center. Culm is waste coal or coal dust. The principal difficulty during the past has been found in getting this waste coal to burn with a suitable binder or cement that will mould the dust or the coal together. Outside of this field, however, there is much need for the development of a practical fuel from an entirely different source.

31. ROADS: About the best road now in general use is that known as the Macadam road. This costs, however, about $10,000 per mile. Those figures alone are sufficient to convince anyone that there is an immense need here for improvement.

32. PAINTS: There has long been a demand for a good paint to be used on the bottom of ships to prevent fouling or the formation and growth of barnacles. There has been considerable development in this field during the past twenty-five years, but no perfect paint for this purpose has as yet been discovered.

There is also an excellent field for a paint both for exterior and interior use that will have fire-resisting and weather-proofing properties.

33. FIRE EXTINGUISHING COMPOUND: There is upon the market a fire extinguisher known as "Pyrene" which has had a wide sale and proved highly successful. This is in the form of a liquid which upon application to the fire is immediately transformed into an extremely heavy gas which contains no oxygen and has a tendency to settle on the fire and shut off the air therefrom, with the result that the fire simply dies out. This compound is monopolized, however, and there is therefore much demand for improvement and for the development of other fire extinguishing chemicals equally efficient but that will not infringe in any way the goods at present in use.

34. RADIUM: The recent discoveries of carnotite and pitchblende deposits in some of our western states, and particularly Colorado, has served to bring vividly before us the fact that practically all of the advance that has been made in the production of radium since its discovery has taken place in countries foreign to the United States. At the present time our own ore is being shipped abroad to be refined and much of the radium produced is purchased by us and returned to this country. It is expected that the United States will lead in the production of radium, as in most other things, and it therefore behooves us to develop a truly American process of extraction at a low cost.

35. ACETYLENE GAS: The cost of production of acetylene gas is still too high to permit its general adoption for lighting purposes.

In order to reduce this expense some means will have to be found for reducing the cost of manufacture of calcium carbide which, when mixed with water, produces acetylene gas.

It is also pointed out that magnesium carbide will produce more "acetylene" gas than the same quantity of calcium carbide, but magnesium carbide costs considerably more to produce at the present time than does the other. A reduction of the cost of either would undoubtedly prove highly successful from the standpoint of the fortunate inventor.

36. TEMPERING COPPER: Some means by which copper can be hardened or tempered is one of this world's lost arts, for there is every evidence that ancient races were able to harden this metal and adapt it for use in the manufacture of knives, weapons, etc., although modern science working in this field has been baffled at every turn. One frequently hears of a solution of this problem, but the fact remains that no successful process has as yet been brought to the attention of the commercial world.

37. LUBRICATION: The subject of lubricating oils and greases is such a very important one that large manufacturing plants and railroads have employed chemists who do nothing else than experiment in this field. The production of a lubricating oil for specific purposes, that is not too heavy or too light, that will not gum under various conditions, that will reduce friction and the consequent heating of bearing surfaces to a minimum, is a much more difficult problem than would at first appear. There is much room for experiment and discovery in this field.

38. SUBSTITUTE FOR RUBBER: The demand for a practical substitute for India rubber has not as yet been supplied, although the need for such is increasing from year to year. Various fields have been worked by chemists in an attempt to develop a practical substitute. Reference has already been made to the extraction of alcohol from beets, potatoes, etc. One of the by-products of such a process is fusel oil. Fusel oil is rich in a substance known as isoprene which is capable of being worked into a material very similar to rubber. It is possible that a process for converting isoprene into a substitute for rubber would not only prove highly successful in itself but would also reduce the cost of production of alcohol. There are other similar fields which can be worked to very good advantage in view of the insistent demand.

39. CLOTH PRESERVATIVE: It would seem that a chemical of some kind that could be applied to the bottoms of trousers' legs, the wrists of sleeves, and other parts of the clothing subjected to considerable wear and that would prevent that wear to any great extent without in itself being noticeable, even when applied to the finest fabrics, should meet with a great demand with consequent profit to the inventor. To those who have developed such a preservative, I can give valuable assistance.

40. DETERGENTS: Improved dust-laying compositions and "sweeping compounds," as well as many other forms of detergents are always in much demand and find a ready market when practical.

41. SOLDERING ALUMINUM: To many arts where single sheets of metal are used in manufacturing, or even where metal sheets can be fastened by riveting or similar connecting means, the development of aluminum has proved a boon. However, failure to discover some means of soldering it or some solder by means of which small pieces of aluminum can be rigidly fastened together, has prevented its adoption in many other arts where it could otherwise be used to ex-

tremely good advantage. The development of some economical means for soldering aluminum would seem to be merely a matter of experiment, but at the same time it would pay its inventor handsomely.

42. EXTRACTING NICOTINE: The removal of the poisonous substance known as nicotine from smoking tobacco would render the use of the weed practically harmless, yet no process of extraction has as yet been devised that does not seriously affect or positively destroy the flavor of the tobacco. In these days of modern chemistry there is no reason why this problem could not be worked out to the financial advantage of the inventor and the physical betterment of the smoking public.

43. SUBSTITUTE FOR SILK: There is now on the market a good deal of artificial silk which it is difficult to tell from the real product. However, a little wear soon removes the silky coating with which the fabric is provided and a more or less shabby and unattractive appearance invariably results in a short time. There is, therefore, still much room for improvement, and anyone that can devise a substitute for silk that will not lose its silky appearance and sheen under a little wear would undoubtedly make a fortune.

44. GUTTA PERCHA: Gutta Percha is largely used as waterproofing material for submarine cables, and as a cable of ordinary size requires an immense amount of this substance and inasmuch as gutta percha is extremely high in price, it can be readily appreciated that a good substitute, if properly protected by means of patents, would bring most excellent returns.

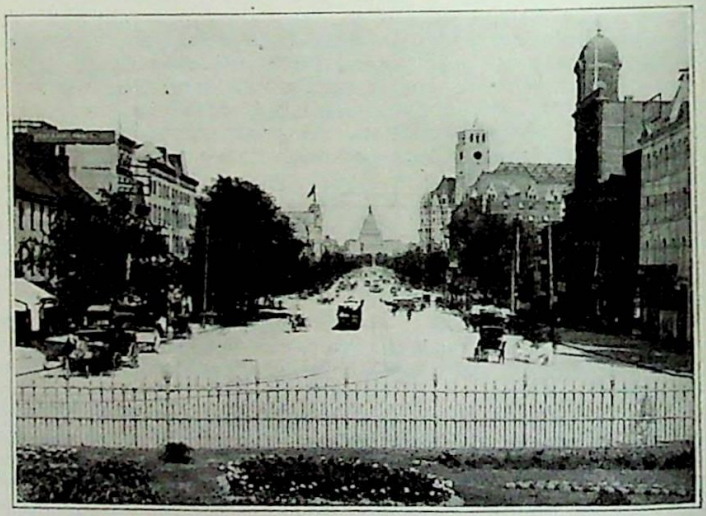
45. FOOD COMPOUNDS: The millions of dollars that were made by Mr. Post with his "Postum" and other food products; by Prof. Anderson, who discovered and patented the process by which "Puffed Wheat" and "Puffed Rice" is manufactured, and many other similar cases which need not here be set forth, served as ample evidence of the great commercial opportunities in this line. There is no reason why many foods now in existence could not be put up in powdered form or otherwise preserved to very good advantage, while there is every reason to expect that the near future will bring forth many entirely new foods not now thought of. Some attempts have been made to market milk in the form of a powder, but considerable difficulty has been encountered because of the fact that the powder could not be entirely dissolved and, of course, the public does not like to find insoluble substances in such compositions. It is possible that you can overcome this difficulty.

46. SUBSTITUTE FOR PUTTY: Putty is an easily manufactured substance which has become almost indispensable in many of the arts, but when used for fastening window glasses and for similar purposes it has a proneness to dry up, crack and fall out. There is apparently no good reason why careful experiment should not find some way to avoid this, or perhaps develop an entirely new substance that could be used as a substitute. In so far as fastening window glasses is concerned, it is quite possible that some mechanical contrivance or fastening device could be developed that would be better for this purpose than putty.

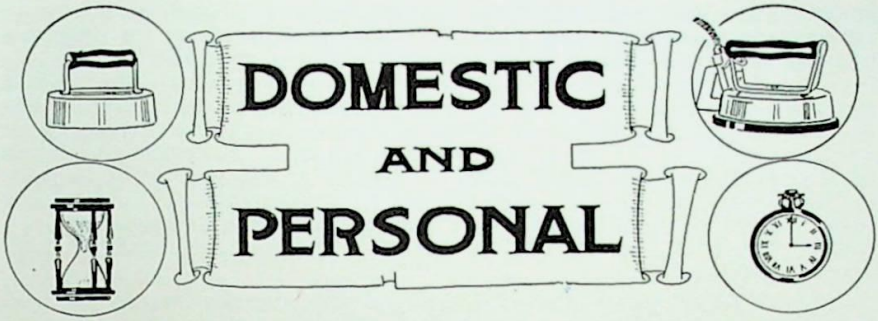
47. GLASS: There is an unceasing demand for an improved process in the manufacture of glass by which this substance is rendered less brittle and of a better and clearer quality. Attention is also directed to the fact that the manufacture of a flexible glass is something which the near future may produce. It is needless to say that the development of such a process would be of inestimable value.

48. **BY-PRODUCTS:** Perhaps the biggest field for the moder chemist is the development of ways and means by which waste ma terials now thrown away as useless can be developed into valuab by-products. The repeated advances made in this direction in recen years are truly wonderful. Reference need only be made in this con nection to the immense number of by-products of petroleum, amon the more important of which are kerosene, gasoline, naphtha, ben zine, vaseline, various kinds of lubricating oils and greases, cosmeti preparations and the like.

In paragraph 38 in discussing a substitute for rubber, referenc was made to the possible use of isoprene, which is obtained from fus oil, which is in turn a by-product formed during the process of extrac ing alcohol from beets, potatoes, etc. When, however, alcohol is ex tracted from wood, no fusel oil is obtained. However, acetic acid, substance known as ethyl-methyl and certain hydro-carbons are ob tained. As far as is known at present, these hydro-carbons are o no value. If a use could be found for them the process of extractin alcohol from wood would be made more valuable and consequentl the alcohol itself could be reduced in price to a material extent. Th is merely a suggestion showing how this field can be worked t immense advantage.



Pennsylvania Avenue, Looking East



DEVICES used around the household are usually of such a nature that they can be easily and readily sold either through the mail or by a system of canvassing agents traveling from house to house and from town to town. Even slight improvements or advances in the art relating to any of these devices can usually be easily sold in this way and consequently patents in this field are among the easiest to promote. In addition to that, everyone comes into contact every day with things in this line that can be improved upon, and perhaps has ideas for entirely new propositions occur to him from time to time. Because of the demand for inventions of this nature there is always a large number of inventors working in this field and, consequently, it is invariably advisable to get your application on file just as soon as possible after reducing your idea to the practical point.

49. **BRUSHING AND SCRUBBING DEVICES:** Included under this heading are vacuum cleaners. Quite a large number of patents have been taken out in this art during recent years, but it is noted that practically all of the highly successful devices now on the market cost a considerable amount. There are cheaper vacuum cleaners sold by canvassing agents or by mail, but these have proved almost entirely unsuccessful in operation. The solution of the problem would seem to lie in the production of a practical but powerful pump working on the diaphragm principle that can be operated by hand or foot power. Improved nozzles and cleaning attachments and also improved means for emptying the dirt from cleaners are in demand.

Scrubbing machines similar in their broad principles to vacuum cleaners and adapted to be run over the floor, applying soap and water thereto in proper quantities, should also be devised. Perhaps the same principle could also be used in connection with a machine for polishing hard-wood floors.

50. **WASHING MACHINE:** There are now many clothes-washing machines upon the market, although none of them are perfect and few of them ever satisfactory. New mechanical motions causing a combination of a vertical, rotary and lateral movement to be transmitted to the clothes, improved means for forcing the water through and through the clothes in the machine and many other improvements, including new driving means, are required by the manufacturers in this line.

It is noted that there are no household dish-washing machines on the market. A number of large machines have been developed for use with establishments of considerable size like hotels, lunch

rooms, etc., but none of these machines have proved practical or efficient in operation, and there is perhaps more room for improvement in this line than in that of clothes-washing machines.

51. COOKING UTENSILS: This is a field in which the woman inventor should shine. In spite of the large number of different kinds of utensils on the market, the time is sure to arrive when the proper utensil cannot be found in the modern kitchen. A device consisting of a combination of useful utensils should prove successful in view of the foregoing, and any improvement in present utensils, or entirely new vessels that will accomplish results in a shorter time, or in a better way, could readily be disposed of to some of the manufacturers on my mailing list.

52. EXTERMINATING PESTS: Of the various means devised for exterminating flies, roaches, rats, mice, etc., various forms of traps and fly-paper have proved the most effective. There is still much room for improvement, however, particularly in view of the fact that much has been done in this art in the way of developing objectionable poisonous compounds which are highly dangerous to human beings and should be avoided. If you can devise anything practical and efficient, now is the time to patent it.

53. ASH SIFTERS: The old reciprocating ash sifter, adapted to be put on top of a barrel, was patented many years ago and made much money for its inventor. Since then various other forms of sifters, including the rotary and many modifications thereof, have been developed, but none of these have proved as cheap, and few of them as efficient, as the old original. Manufacturers in this field would adopt a very cheap device that they could monopolize under a patent right and which could compete with the reciprocating sifter. An improved device that would prove more efficient would doubtless be adopted even if it were a little more expensive. Attention is also directed to the fact that practically all sifters raise quite an amount of dust and make considerable noise. It would seem that these objections could be overcome.

Why could not a combined grate and ash sifter be devised so that stoves and furnaces would automatically sift the ashes when being "shaken down"? Also it would seem that there is a good opportunity for some one who can devise an ash sifter that could be put direct in the ash pit of a stove or furnace and that would sift the ashes without their being removed from the pit and carried to an independent sifter.

54. SHOE AND BOOT SCRAPERS AND CLEANERS: There have been upon the market several forms of devices designed to permit the sole of the shoe to be drawn across them so as to scrape off any mud that might be adhering to the shoe. These have proved worth while as far as they have gone, but none of them have proved efficient in taking all of the mud off of the sole or that off of the side of the sole or the uppers. Someone should invent an improvement on these devices that would remove all of the mud efficiently and quickly. It is said that some cleaners now on the market, provided with brushes, are not satisfactory in accomplishing this result.

55. HOUSEHOLD ICE PLANT: The former great industry in our northern states of cutting ice and storing it in winter time to be shipped to points where it is to be used in the summer time is almost a thing of the past, this having been brought about by the construction of modern refrigerating plants throughout the country where ice can be manufactured at a figure less than the former cost of cut

ting, storing and shipping it. The next step in this industry will undoubtedly be the development of a refrigerating plant that can be installed in any home. There is no reason why this cannot be worked out in such a practical manner that a home plant would be within the reach of almost anyone. The day is not far distant when we will find that we can make ice direct in our own refrigerators.

56. SAFETY RECEPTACLE: Those of us residing in cities all know how frequently our morning newspapers, or our milk, bread, etc., are stolen. To avoid this some form of holder or receptacle should be devised in which these necessary adjuncts to our daily lives could be placed by the newsboys, milkmen or bakers. Some attempts have already been made in this line, but the resulting inventions have been so cumbersome, costly, unsightly or otherwise impractical that they have not been adopted. These objections must be overcome, and in additon to that they should be automatic in their operation, so that the paper, bread, or milk placed therein will be automatically held in place for the reason that time cannot be taken to lock them in position.

57. BOTTLE CLEANING DEVICE: The only household bottle-cleaning device now on the market that can be considered anything like efficient is the ordinary bristle brush. Anyone who has ever used it knows with what difficulty a bottle, even a large-neck one like a milk bottle, can be cleaned. The person successfully working out a cleaning device that will save time and labor and that will also actually and thoroughly clean the bottles would undoubtedly make considerable out of it.

58. CURTAIN STRETCHER: The racks now on the market for stretching and drying lace curtains have only one thing to recommend them, that being their low cost of manufacture and marketing. Every housewife is aware of the fact that these racks will stretch curtains unevenly, and frequently will tear the fabric. Why not construct a rack that can be easily and quickly adjusted, that can be readily taken apart or folded into a small space for storage purposes that will not cost too much to manufacture and that will not tear the finest curtains? It would seem practical to construct such a rack to take several pairs of curtains and then be extended so as to stretch the curtains after they have been fastened to the racks instead of while being fastened in place as at present.

59. BUTTON-HOLE ATTACHMENT FOR SEWING MACHINES: This is an invention which has long been in considerable demand. To one familiar with domestic sewing machines and with the principles of mechanics, it would seem that this device should not present any greater difficulties than some inventions of ordinary value.

WEARING APPAREL.

Some very successful patents have recently been taken out on different articles of personal attire, such for instance, as improvements in collars and cuffs, shirts, sanitary underclothing, improved garters and so on. The average inventor is a little inclined to pass by this profitable field without a second thought. That, of course, makes this line all the more attractive to those who give it careful consideration.

60. SUBSTITUTE FOR SUSPENDERS: In spite of the fact that, during hot weather particularly, men are apt to swear at their uncomfortable suspenders, the fact that no substitute can be found on the

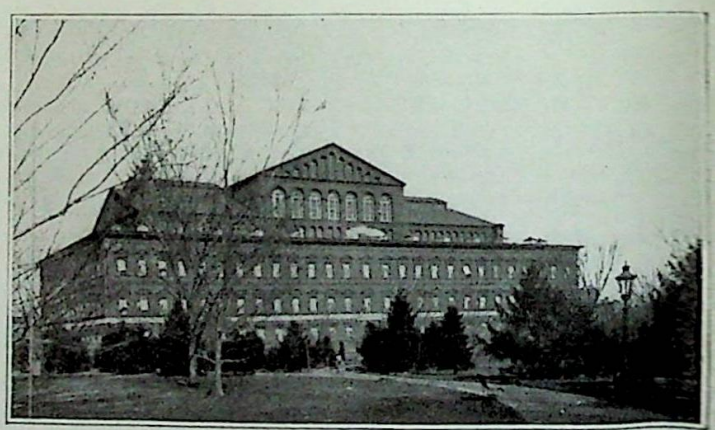
market must be taken as clearly indicating that no one has succeed in devising a practical means of supporting the trousers without t use of either suspenders or a belt, both of which have severe dra backs. Here is a problem which would seem simple at first thoug but the further one goes into it the more difficult it becomes.

61. WATERPROOF SHOES: There are shoes to be bought no which are made out of a leather especially treated by a water-proof process. This waterproof leather, however, does not prevent t water from finally working its way in around the sole or through t openings in the upper where the fastening means are position whether that fastening means be laces or buttons.

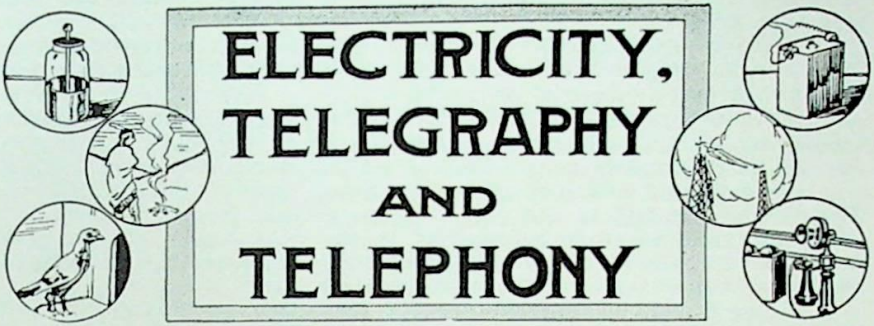
62. DETACHABLE SOLE FOR SHOES: We are all familiar wi the unfortunate fact that the soles of shoes sometimes wear out befo the uppers do and that uppers sometimes wear out before the sol The ordinary "half-soling" process is usually unsatisfactory for t reason that the new half-sole is almost invariably of a slightly diffe ent size than the original sole, with the result that the upper thrown out of shape and made uncomfortable. It would seem that t so-called high cost of living could probably be reduced to some exte by providing shoes with detachable soles, so that the soles could b made independent of the uppers and vice versa.

63. WATERPROOF FASTENING FOR SHOES: Reference h already been made to the fact that water will find its way into sho through the fastening means in the uppers. It is possible that t flap could be rendered waterproof by the development of a ne fastening. Placing a second tongue on the outside of the flap h already been tried, and of course this simply makes it a little mo difficult for the water to get into the shoe but does not render t shoe waterproof by any means.

64. SUBSTITUTE FOR FELT: As fabrics go, felt is one of t most expensive of materials, yet no less expensive substitute for has ever been discovered. There is considerable need for such a s stitute in several different arts.



Pension Office



ELECTRICITY, TELEGRAPHY AND TELEPHONY

IT is impossible to do justice to this subject. Electricity, in one form or another, has become so interwoven with our every-day existence that we, as a general rule, do not give it a second thought. Yet this present generation has seen it come into existence as a lighting medium. This generation has seen the birth of the electric car, the electric locomotive, the electric automobile, the telephone, wireless telegraphy, wireless telephony, and has observed advance after advance in the line of electrical generation, and the application thereof, until now, when we do give it passing consideration, we stand awestruck before this wonderful slave of mankind.

Everything today is being electrified in one form or another. Even sea-going ships are being driven by electrical power. Yet, when we stop to realize how little we know about electricity, and remember that we do not even know what it is, we cannot help but wake up to the fact that the future of this science is far greater than its past has been. We have far more to learn about it than we now know. Just over the horizon are, undoubtedly, wonderful discoveries that will astonish the world, but what those discoveries will show us no one can foretell.

Consequently, hints of improvements desired in this field can only be based upon what we now know and upon devices now in use and familiar to us. The great advances and wonderful discoveries will have to be left to the hosts of scientists, students, experimenters and inventors.

65. ELECTRIC HEATERS: Electric heating devices of various kinds have recently come into almost popular use. Their efficiency, however, can be considerably increased by improving the heating element. The heating coils or wires should be surrounded by as little metal as may be in order that as much heat generated as possible may be radiated instead of being absorbed by the surrounding structure. Such things as electric toasters, coffee percolators, stoves of various kinds, and so on are now on the market, but can be greatly improved both along the lines above suggested and also by improving their structure so as to increase their usefulness.

In this same connection attention is directed to electric irons. The difficulty in this field heretofore has been that the temperature of the iron cannot be regulated except by cutting off or turning on the electric current. There should be an automatic device (which must, of course, be very small and should preferably be built into the iron itself) that will automatically cut off the current when the iron be-

comes a certain temperature, and turn it on again when the temperature falls.

There is also a demand for such things as electric soldering irons that can be used in connection with an easily transportable storage battery, or other source of electrical energy.

66. IMPROVED STORAGE BATTERY: The demand for improvements in storage batteries is so well known to everyone that it needs hardly be referred to here. Edison, among others, has been working in this field and has met with very good success, but he, himself states that the end is not yet, that the perfect storage battery is a long way off, but that he expects in the near future to see great advances in this field that will considerably increase the capacity of batteries of this type and also add greatly to their life.

There is said to be some demand for a storage battery that will deliver its full charge in a few minutes or seconds, even though thereafter the battery be entirely useless. Such a battery could be used to advantage in driving submarine boats or torpedoes.

67. NON-CONDUCTING GLOVES: The gloves of rubber, or rubberized fabrics, used by electrical workers are unsatisfactory because of their lack of wearing qualities as well as because of the fact that they are not absolutely safe, being easily melted by an unusual heat. There is, therefore, much demand for a good improvement that will overcome the objection noted, but that at the same time will provide gloves that are sufficiently soft and flexible to permit the wearer to work without difficulty.

The French "Accidents to Workmen Assurance Association" is said to have offered a prize of 1,000 francs for the invention of a successful glove of this type.

68. IMPROVED DYNAMO: One of the big things wanted in the field of electrical generation is a dynamo that will give a constant potential.

69. SUBSTITUTE FOR LAMINATED STRUCTURES: Large castings vary to such a degree in quality and texture that they cannot be used in the construction of high-class electrical apparatus. This has resulted in the practice of building up metal structures such as those used as generator covers, armatures, etc., out of a large number of sheets of metal, it being possible to make each sheet uniform when this would be impossible with a single casting of size. This, of course, is an expensive construction requiring much time. Some means should be devised by which castings of this nature could be made in one piece to take the place of the laminated structures now used.

70. ELECTRIC MASSAGE MACHINE: Massage machines have come into such general use that there are now on the market a large number of different types of devices which give more or less satisfaction. There is still much room for improvement, however, in so far as weight, ease of operation, regulation of the speed of vibration, etc., are concerned. No expensive experiment is required and, as it would seem improvement would be comparatively easy, this field should prove a profitable one in which to work.

71. ELECTRICITY DIRECT FROM COAL: No less an authority than Thomas A. Edison stands sponsor for the statement that we will some day, obtain electrical energy direct from coal. Mr. Edison himself has worked in this line, but so far without success. It would seem that some chemical means would be the only practical method of effecting the necessary conversion. Inasmuch as the solution

this problem would do away with the present form of electric generators, together with the necessary power to drive them and the use of coal as a fuel in order to obtain the power, it is needless to point out that the reduction of this problem to a practicality would mean millions to somebody.

72. THE ELECTRIC FURNACE: The recent development of the electric furnace has made possible a degree of heat formerly only dreamed of. It has come into use in several arts, and its adoption in other arts is limited only by the rapidity of its improvement.

It would seem that the long-sought-for artificial production of genuine precious stones might be solved by experiment with the electric furnace, this being particularly true when some practical means has been devised for increasing the degree of heat obtained.

73. PREVENTING ELECTROLYSIS IN UNDERGROUND METAL STRUCTURES: Stray electric currents traveling through the earth have the unfortunate habit of setting up a chemical action known as electrolysis in underground pipes used as sewer conduits, etc. This results in the gradual eating away of the pipes until they become worse than useless. It has recently been discovered that the same electrolytic action is also set up in the underground metal structures in foundations of buildings, particularly in damp localities. Some means should be devised to prevent this. This undoubtedly could be a compound or coating of some kind that would insulate the metal.

74. PREVENTING AND DISPELLING FOGS: It seems to be fairly well established at the present time that electrical waves may be utilized successfully in preventing and dispelling fogs. Experiments have been more or less successful. As this would be a life-saving proposition as well as a commercial one, the problem would seem to be well worth considerable thought and should result in financial success to the lucky inventor who solves it.

75. ELECTRICALLY OPERATED TRANSMISSION GEAR: There is no practical reason why the speed of all machines depending upon transmission gears cannot be varied by the simple pressure of a button or the throwing of a switch that will electrically change the speed by throwing in a higher or lower gear as may be desired. This would be a time-saving proposition, not only because of the celerity with which the gears would be changed, but also because of the fact that various circuit-closing means could be positioned at different points from which it might be desired to control the transmission.

An electrically controlled transmission gear for automobiles is now in use, but there is much room for improvement, particularly in view of the fact that the present gear is monopolized by patents and, at that, is not entirely satisfactory.

TELEPHONY.

76. AUTOMATIC TELEPHONE EXCHANGE: Past attempts to develop an automatic telephone exchange, or a large telephone switchboard, so that any subscriber can obtain connection with the telephone of any other subscriber without the intervention of a central operator, have not proved successful, although there is an automatic telephone in use in Chicago at the present time. The solution of this problem would save millions of dollars every year to the telephone

companies in salaries alone, and would doubtless result in subscribers receiving more expeditious service.

77. THE "TELEPHOT": This is the name that has been given to an imaginary apparatus that will permit a person using a telephone to see an image of the person at the other end of the line. A practical device of this kind would be of the greatest value to business men in the habit of transacting important business by telephone conversations. The opportunities for fraudulent transactions are now extremely great, there being no means of identifying the person to whom you are talking.

78. TELEPHONE LOCK: There is considerable need of a simple locking device that will prevent the use of a telephone by any person except him who has the key or the combination. This could either be applied to instruments now in use or could be built into new instruments. The second mentioned means of locking 'phones against unlicensed use will doubtless be adopted ultimately, although the first way ought to prove profitable at the present time if worked out in a practical manner.

79. TELEPHONE MESSAGE RECEIVER AND CALL RECORDER: These are usually considered as two separate inventions, but there is no reason why they could not be combined in one. By a "message receiver" is meant some kind of an apparatus that will automatically record a 'phone message even when there is no one present to answer calls. A person in possession of such a device could, for instance, leave his office and upon his return find the complete telephone message recorded for him. This apparatus could work upon the phonograph principle.

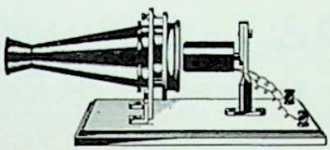
A telephone "call recorder" should be some form of indicator easily attached to instruments now in use that will automatically record the number of calls made on the instrument, thus doing away with the necessity of the subscriber depending upon the count made by the telephone company. A small, manually operated, indicator suitable for this purpose would make an excellent advertising novelty or device to be sold by canvassing agents. A more complicated automatic device for use in business establishments, where a few seconds' time is a matter of great importance, is needed.

80. INTERCOMMUNICATING TELEPHONE — THE DICTOGRAPH: The necessity of saving the executive's time in large offices has, in recent years, given rise to the development of intercommunicating telephone systems for use within private establishments. Improvements in these systems are in considerable demand, that being especially true of means for quickly calling any particular department or division of the business, or any desired assistant. At the same time the cost of installation and maintenance must be kept at the minimum and the room occupied by the system must be small.

The recent commercial development of the dictograph, which has come into such prominence in recent years in connection with detective feats, has provided an ideal intercommunicating telephone system for office use. Any improvement in the dictograph, however, is in considerable demand not only from the commercial side of the question but also in the field for which it was originally designed.

81. THE WIRELESS TELEPHONE: Already we have ceased to wonder at the success of wireless telegraphy, but wireless telephony is just beginning to receive public attention. It has proved practicable to transmit the human voice without wires over miles of space, but the wireless telephone is not as yet reduced to a commercial success. It is something well worth studying in view of its

future. Undoubtedly the time will come when one person will be able to telephone to another without the use of wires and without the necessity of first communicating with a central station. Before that time can arrive, however, some means will have to be devised that will prevent others from interfering with the circuit or "cutting in" on the



The First Telephone

conversation as is, at present, possible both with the wireless telephone and with the wireless telegraph.

Receivers of much greater sensitiveness must also be developed.

TELEGRAPHY.

82. ELECTRIC TELEGRAPH: Although the electric telegraph is an invention of modern times it is one of the few fields of invention the comparatively near end of which can be foreseen. Many of us will live to see the day when the wireless telegraph and the wireless telephone will completely put the present telegraph system out of business. In the meantime, however, much can be done, particularly with what has been called a "telegraphic typewriter," by means of which an operator can typewrite a message which will be automatically telegraphed to a similar machine at the other end of the line and there automatically recorded on paper. Many brainy men have been working on this problem for some time, and in recent years some have achieved more or less success, although no device has, as yet, been devised that can be considered sufficiently practical to come into commercial use. Undoubtedly the first one that develops a machine of this kind, that can be considered commercially satisfactory, will make all of the money out of it that he will need during the rest of his days, if he handles it in the right way.

83. ELECTRICAL TRANSMISSION OF PICTURES: Several inventors, and notably T. T. Baker and Professor Korn, have met with more or less success in developing apparatus whereby pictures can be transmitted by electricity. This is true to such an extent in fact that the reproduction of a photograph has actually been sent from Berlin, Germany, to London, England. This is a field, however, which is still in its infancy. It undoubtedly has a big future, and the present is the time to get in on the ground floor.

As there is little possibility of transmitting pictures in natural colors, but only in black and white, or in other words, light and shadow, it would seem possible to practically solve this problem by the use of selenium, which could be acted upon by the lights and shadows of the original picture in some way or other yet to be devised.

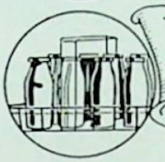
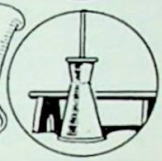
84. WIRELESS TELEGRAPHY: Here there is a whole lot of room for improvement, this still being an infant field of endeavor Improved receivers that will do away with the "head harness" now worn by wireless operators and that will permit sounds to be received

just as they are now translated by telegraph sounders, improv
tuning coils and means by which to get quickly in tune with oth
stations, means whereby unfavorable atmospheric conditions can
overcome or their effect minimized, and a large number of oth
things which will readily occur to anyone familiar with wireless tele
raphy, are in much demand and bring excellent figures when work
out in a practical way.

Attention is again directed to the necessity of devising som
means by which messages can be sent to a given station witho
other stations "cutting in" on that message or receiving it.

85. WIRELESS TRANSMISSION OF POWER: Laboratory e
periments have already been conducted, more or less successfull
that indicate that it is only a question of time before someone wi
solve the question of transmitting electrical energy for lighting ar
power purposes without the use of wires. This will make it po
sible for sea-going vessels to be driven by electricity transmitted
them from land by wireless. It will make it possible for flying m
chines to be electrically driven, drawing their power from distan
stations on land. This is now a virgin field and one well wor
time and much experiment.

Home of George Washington, Mount Vernon

AROUND THE FARM AND DAIRY

A LARGE proportion of successful inventors come from among the farmers of this country. They have developed, and their fertile brain devised, many of the most successful inventions of modern times. Without these epoch-making forward steps in our civilization the entire commercial progress of this country would have been greatly hampered to say the least. For that reason many important industries which are, at first glance, entirely unrelated to that of farming, would not be possible, and might not be in existence at all in this large country, if it were not for the successful farming class and the thousand and one successful inventions which have been developed by agriculturists. The plow, the reaper, harvester, binder, the modern types of seeders, planters and other similar farm machinery are only the more apparent of the many improvements, some of which do not appear of great importance alone, but all of which combined make possible the immense agricultural interests of this country.

There is still a great deal of room for improvement, as every farmer will testify. There is hardly a single piece of farm machinery that cannot be bettered. This fact alone makes the field an attractive one. In addition to that, attention need only be directed to the statement, which has time after time been absolutely proved, that only a small improvement in this field need be made in order to insure commercial success, provided that improvement is a practical one, and provided the invention is pushed. Although the farmer is, perhaps, our most prolific inventor, it must truthfully be said he is not always inclined to push his invention after he has obtained a patent, either because he is a long ways removed from the ordinary beaten paths of commerce or because for some other reason he is not in a position to give the matter his time and attention. My sales system and method of promoting patent rights are therefore unusually valuable from the standpoint of invention in this general line.

Farmers will frequently make slight changes on tools and machines in constant use by them without ever thinking of procuring a patent on same or doing anything whatever toward acquainting the general public with what they have done, which might be of considerable value. It is advised that all improvements, no matter how slight they apparently may be, be submitted to a good attorney as soon as possible for careful and thorough advice as to value and patentability.

86. AUTOMOBILE PLOW: No one has, as yet, invented a successful automobile plow of reasonable size and cost. What is wanted is a small, single plow that will not cost too much and that can

be driven by a gasoline engine. The field for such an implement would be almost unlimited; its success, if practical, assured. The patentable features of such an invention would reside in the manner of applying the power, or, in other words, the construction by which the motive power is adapted for use in connection with the plow.

87. SELF-GUIDING PLOW: A plow that will guide itself is something long sought after but as yet not devised. The merit of such a proposition is apparent to every farmer, and therefore need not be dwelt upon here.

88. AUTOMATIC BEAN SEPARATOR: There is much need of an automatic machine that will separate good beans from bad ones. If, in addition to that, the machine could be made to separate or sort the beans into various sizes, the invention would be made all the more valuable.

89. HOP PICKER: The man who first works out a practical hop-picking machine that will successfully supplant the hand labor now used will find himself greatly enriched through his ingenuity.

90. COTTON-PICKING MACHINE: Inventors have long recognized the great need for their talent in the production of a successful cotton picker. Many patents have been granted upon such ideas, but none of these have come into general use and, so far as is known, none of them have proved sufficiently practical to be worth while. Most of the efforts in this direction have been limited toward the production of a large machine which would prove extremely costly and therefore whose field would be more or less limited. On the other hand, a very small apparatus operated by hand labor would probably not be very much of an improvement on the present method of picking cotton manually. A happy medium should be found, and a machine devised that will travel between the growing plants and pluck the cotton therefrom.

91. FENCE POSTS: All farmers are familiar with the difficulties encountered in driving fence posts into the ground, or in properly setting them without the necessity of digging a post hole. They are also well aware of the vast damage done in the more northern states of this country through the action of frost, which will gradually force fence posts out of the ground. It would seem that these difficulties should be easily overcome by constructing posts of metal, either sheet or cast. But in so doing another difficulty is encountered, and that is a suitable way for fastening the fencing to the posts. An expensive fastening device should not be given a second thought. The fastening device should be of such a nature as not to become easily broken through the action of rust, and, above all things, must be capable of being easily removed so as to release the fencing when desired.

Considerable has been done, as shown by the Patent Office Records, toward developing concrete fence posts. The difficulty with these, however, comes in a suitable means for fastening the wire fencing to the posts and also in reinforcing the concrete in such a way that it will not readily crack or break.

92. MACHINE FOR HUSKING CORN: A successful machine that can be taken into the field and that will husk standing corn has yet to be devised. Quite a number of attempts have been made to solve this problem, but the very fact that no machine of this character is, as yet, upon the market is ample proof that no practical apparatus has been invented. It is needless to refer to the financial side of an idea for which there is such great apparent demand.

93. HEATING ORCHARDS: The practice of heating orchards to prevent damage by frosts is a comparatively recent one, but has

been found highly successful wherever it is possible to light the heating devices quickly and before the frost can get in its work. There are many large orchards, however, where hundreds and, for that matter thousands, of heaters are required and here it has been found almost impossible to start all of the fires quickly enough to avoid damage.

There is some demand, therefore, for an automatic means of lighting the necessary heaters, and this means can either be applied to each individual heater or else all of the heaters can be connected up in such a way as to permit them to be lighted from a central station.

There is also considerable demand for improvements in the heating devices themselves.

94. DIGGING MACHINES FOR POTATOES, BEETS, TURNIPS, ETC.: These machines have practically the same object to accomplish and therefore are all included under one title. There have been a number of patents granted upon potato diggers and also upon beet diggers and toppers, but they have not proved efficient or practical either from the standpoint of successful operation or from that of cost, which has almost invariably been prohibitive.

Reference is made on page 7 to the offer of $10,000 as a prize for the production of a successful beet digging and topping machine. This would undoubtedly form only a small portion of the value of the invention, and the same also applies to the development of successful machines that will dig potatoes, turnips, etc.

95. STONE-PICKING MACHINE: There is no apparent reason why a successful machine cannot be devised that can be run through a field and that will pick up practically all the stones therein and automatically place them in a receptacle carried by the machine or leave them in piles, later to be collected.

96. VEHICLE-OPERATED GATE: Farm gates operated automatically by the vehicle about to pass therethrough and self-closed after the vehicle has passed, are now in use to some little extent. They are in many instances, however, impractical and more or less unreliable and those now on the market are considerably more costly than this type of gate will eventually become after further development. While the present demand exists is an excellent time to market practical improvements that will decrease the cost, increase the reliability and not affect the manual operation of the gate when it is desired to open and close it in the usual way.

97. MACHINE FOR HARVESTING PEANUTS: The peanut industry is one of considerably more value than the uninitiated are inclined to think. The value of a crop, however, could be greatly increased if someone could devise a harvesting machine that would recover all, or practically all, of the peanuts, this being impossible by the use of present facilities, a large proportion of each crop being lost.

98. WIRE STRETCHERS: There are a large number of wire stretchers upon the market. In spite of that fact, however, there is room for improvement and a constant demand for advances in this art. Many stretchers pull the wire taut within a few inches of the posts to which it is to be fastened. A successful stretcher should, however, tighten the wire to a point beyond the posts, so that there will be no slack whatever after the wire has been connected to the posts. It is needless to say that it must be simple in operation, strong and efficient, and must have a gripping means that will hold all wire without slipping.

99. **IRRIGATION:** Improvements in irrigating apparatus and structures of all kinds are in considerable demand, this being particularly true of improved gates that can be cheaply constructed, that will not leak, and that can be easily operated. There is also, apparently, considerable of a demand for a device that will prevent fish from getting into irrigating ditches. The following is an article recently published in the "Reno Evening Gazette" of Reno, Nevada:

"WANTED—An inventor who can make a device that will keep trout out of irrigating ditches."

"That sounds easy, but from all the information that has been obtained to date by the Nevada Protective Association for Fish and Game, nothing has as yet been devised which is successful.

"Secretary George I. James, looking up the laws of Colorado and California on the subject for the association, finds these laws have not been enforced because of a lack of a practical appliance to let the water through and keep the trout out.

"With the estimate before it that a majority of the fish hatched in the Truckee river, perhaps the finest trout stream in the world, are dying in the irrigating ditches, the protective association is bending its efforts to find a solution of the problem before the next session of the legislature, in order to have legislation drafted, if possible, that will conserve the fish in the river.

"Probably the best appliance so far found is a water wheel, with bright metal tips on its paddles. The theory of the wheel is that a trout, backing down the stream with its head to the current, will see the shining metal and be frightened away from the irrigating ditch. But from letters received, it is inferred that this wheel has not been satisfactory. Screens, it is shown, are a failure, becoming clogged very quickly in even the clearest water.

"Among other pieces of evidence the protective association has gathered as to the destruction of trout in the irrigating ditches is the statement that a farmer of this valley took two wagon loads of dead trout from the end of his irrigating ditch and spread them on his field for fertilizer.

"Although the large trout go down the ditches, it is the small fry that most frequently make their way down and over which there is the most concern. It is believed that actually a majority of the trout fry, seeking still water to paddle in, go down the irrigating ditches and are lost.

"The recent decision for the construction of a new fish ladder at the Derby dam, where it is estimated fish worth $140,000 died last spring, will solve the problem of fish destruction at that point in the river, but the protective association is puzzled for an answer to the other problem.

"The protective association has information as to the revenue from trout streams in Colorado where the trout are caught and sold for market, and finds as high an income as $250,000 from this source."

100. **CRATE AND BOX HOLDING DEVICE:** Growers and packers of fruits have found that they would be greatly aided by the provision of a simple structure that will hold in various positions crates and boxes which are being packed, so as to permit them to be readily adjusted. The holder should be light, so as to be easily transported from place to place. As crates and boxes are now usually placed upon the ground the development of such a holder would save much back-breaking work as well as much time.

101. **COW-MILKERS:** This is an art in which there has been

much advance during the last few years. But many types of milkers now on the market are entirely too expensive to warrant their adoption by small farmers or dairymen. Others are impractical because of the time required for adjusting them, their low efficiency, or other objections that have been found to them. This is a field well affording careful study and experiment, as any improvement, even although slight, is worth while.

102. WOOD-SAWING MACHINE: The old type of buck saw and cross-cut saw are still much used around the farm, purely and simply because of the fact that no practical substitute has been provided. A small, portable machine driven by a gasoline engine or an electric motor and so arranged that the motive power could be employed for other purposes when the saw is not in use, ought to prove commercially successful. Not only that, but some one should be able to devise a sawing machine operated by hand or foot power that should prove a great advance over the old type of buck saw.

103. KAFFIR CORN HEADER: Many clients of mine in the middle West have mentioned the fact to me that they have never been able to secure a practical, efficient kaffir corn heading machine. A large number of them have stated from time to time that they are working upon improvements in this line, but the fact that none of them have succeeded in solving the problem would seem to indicate that the question is a harder one than would appear at first glance. There is a big demand for something of this kind, and perhaps you are the one who can work it out.

104. FRUIT PICKER: As mentioned elsewhere, the demand for a picking device for large fruits is a more or less doubtful one. There is absolutely no doubt, however, that the lucky person who can invent a successful machine for picking small fruits, such as cherries, cranberries, and other berries, will find himself financially well off.

105. CHURN: In spite of the fact that a large number of patents have been granted upon churns, the old type still seems to be the most popular in many sections of the country. Any improvement in this art that will permit faster operation of the churn with less effort, or that will produce better results, is worth patenting. There is a demand for a churn which is absolutely sanitary and can be easily and quickly cleaned after use.

106. FARM MACHINERY IN GENERAL: There is no piece of machinery used on the farm that cannot be improved upon. In fact, improvements are constantly being made, not only by manufacturers, but also by farmers. It frequently happens that a machine will have to meet conditions on one farm that do not exist generally on other farms or that have not been taken into consideration by the makers themselves. Often, therefore, a machine will prove unsatisfactory when there is really nothing wrong with the design, it simply having been constructed originally without reference to the peculiar conditions existing in the particular case. A little ingenuity on the part of the operator, a slight change in construction here or there, or an addition to one part or another, will almost invariably overcome the objections and make the machine well fitted for the work which it will have to do under those special conditions. It has been my experience that farmers are constantly making these improvements, but seldom recognize the fact that their inventions are of much value to the manufacturers of the machine so improved. It is highly advisable that disclosures of such improvements be sent to some reliable attorney and a complete report obtained as to the patentability and

practicability of such a proposition. Generally speaking, there is no more profitable field of invention than this.

The foregoing remarks apply to all types of farm machines including harrows, diggers of various kinds, harvesters, binders, seeders, and planters, machines for harvesting potatoes, turnips, etc., mowers, rakes, hay loaders, threshers, cotton gins, cream separators, strainers, churns, and particularly machines used for stripping, curing, and packing tobacco. The same remarks also apply to other machines especially referred to hereinbefore.

CARE OF LIVE STOCK.

107. **STANCHIONS:** Modern business methods and the requirement for sanitary surroundings on dairy farms have given rise to a large number of improvements recently in stanchions and similar fittings. There seems to be a growing need for some means by which a large number of stanchions in a row can be released at one time. This should not, however, interfere with their being fastened separately. Some attempts have already been made along this line with indifferent success.

108. **POULTRY FEEDERS:** There are upon the market various types of feeding devices for poultry, some of them furnishing a constant supply of food, others dropping a few grains only when the automatic feeder is operated by members of the flock among which it is placed. Everyone familiar with the art knows that in some types the grain easily becomes soiled or spoiled, whereas in others much of it is wasted through being scattered around on the ground. A number of improvements in this field are apparent and badly needed. Incidentally there is need of an automatic feeding device which will scatter a predetermined quantity of food at a certain specified time without the necessity of being attended.

109. **WATERING POULTRY AND STOCK:** Many excellent drinking fountains for poultry have been devised, but there are no practical fountains in use that are so constructed as to prevent the water therein from freezing in cold weather. The expedient of placing an oil lamp within the fountain, or beneath it, has been tried, but this not only results in a dangerous structure but also, as a rule, in a cumbersome and unsightly device.

It is well known that there is no quicker way of spreading disease among horses and cattle than by providing a common drinking trough in which water stands for a considerable time. Where running water is not available, providing a steady flow through a trough is a rather expensive proposition. It would seem wise, therefore, to develop some structure by which horses and cattle could, at all times, obtain a supply of fresh water without the necessity of having the water constantly flowing or constantly standing in a trough. Some means operated by the stock whereby the water would be turned off and on automatically would accomplish this purpose.

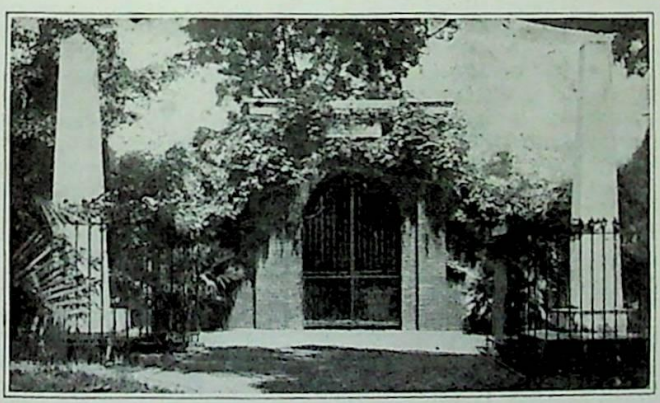
110. **KEEPING TAB ON MRS. HEN:** In spite of the fact that a large number of devices, varying from a too simple form of trap nest to a miniature cash register designed to be attached to a hen's tail, have been developed, the fact remains that there is no absolutely certain method of determining which hens in a flock are laying and which are not. The trap nest is constantly being improved upon with considerable success, but there is still much to be done, as everyone practically experienced in this field knows.

111. CHECK-REIN RELEASE: There should be some simple means whereby a check rein can be released and readjusted without the necessity of the driver getting out of the vehicle or in any way leaving his seat.

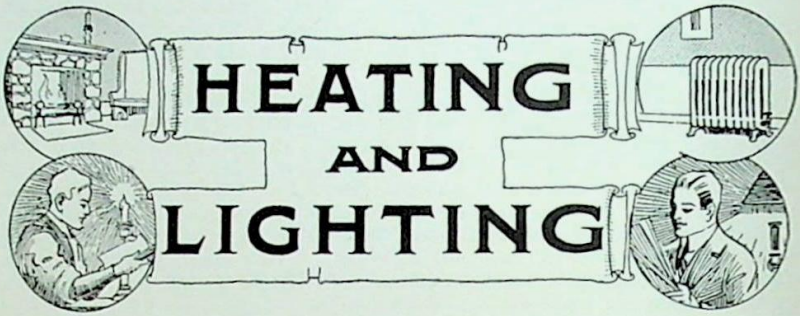
112. FEED TROUGHS: Reference has already been made to the need for improved feeding devices for poultry. The same remarks also apply with respect to feed troughs of various types for all kinds of stock, and particularly swine. Like most other ideas that can be thought of there are some patents granted in this field, but none of them seem to be worth very much, if any, more than the ordinary V-shaped trough in common use. Some kind of a trough that can be filled from outside of the pen and that, at the same time, will prevent swine from getting into the trough itself, should be worked up to advantage.

113. INCUBATORS AND BROODERS: Incubators and brooders can now be cheaply constructed out of metal, and, at the same time, be well insulated from heat and cold. Everyone knows, however, that under many conditions neither the incubator nor the brooder is as efficient as the mother hen.

Improved devices are still needed for shutting off the heat when the temperature becomes too great, turning it on when the thermometer falls too low, notifying the operator when the source of heat fails, whether that source be an oil stove or electricity, and various similar refinements which will occur to any one versed in this field. Improved means for testing out eggs as well as for turning them in the trays periodically, either automatically or otherwise, are needed.



Washington's Tomb, Mt. Vernon



FROM the campfire of our ancestors to the modern hot-water heating plant, vacuum systems or electrical stoves is a far cry. It would seem that the limit has about been reached in this field. Yet the entire history of invention shows time after time that there is no limit. No one can say what the next great advance in either heating or lighting will be. It stands to reason that one of these days our coal resources will be exhausted. The same is also true with respect to petroleum. All great scientists, therefore, are inclined to favor the remaining alternative—electricity. There is no certainty that something totally unknown to us at the present time may not be developed or accidentally discovered just as was coal. This side of the question, however, is such an immense one that it is well for present-day inventors looking for commercial success rather than future glory, to give their entire time and attention to existing conditions.

114. HOUSEHOLD WATER HEATERS: Wherever gas is available modern houses usually have a water heater installed as a link in the plumbing system. These heaters can be made immensely more efficient by improvement in the burner or by the adoption of some means for increasing the heating surfaces. Much of the heat is now lost and conducted off through flues.

There should also be some means provided whereby the heaters can be placed in operation from various points in the house. As they are usually installed in the cellar it means a trip down there to light the heater and another one to shut it off. It would seem to be a simple matter to develop an electrically operated apparatus whereby the heater could be lighted and turned off from an upper floor or floors of the house. In order to accomplish this successfully a highly efficient device for turning on and shutting off the gas would be necessary.

115. STEAM BOILERS: There have been great advances at various times in the construction of steam boilers, etc., but the fact remains that the old style boiler is still in popular use throughout the country. There is considerable need for means whereby water can be brought to the proper temperature more efficiently, more cheaply—which is simply another means of saying that some structure should be devised whereby fuel will be greatly economized.

Combustion in present types of boilers is very imperfect to say the least. Attempts have been made to rectify this by introducing air under pressure from various sources and from different directions.

This has increased the efficiency of some boilers, but the desired results have not been obtained. The entire difficulty seems to reside in the fact that in the ordinary boiler sufficient draught is not provided, or in other words, sufficient air cannot gain access to the burning fuel to properly provide for complete combustion either of the fuel or of the gases generated thereby. Means should be provided whereby additional air could be directed properly to overcome the foregoing objections.

The prevention of scale in boilers is a big problem. There are on the market various compounds designed to be applied either periodically or constantly, and which are supposed to prevent the formation of scale. Those in constant use are not successful, because of their high cost and their inefficiency, and those that are used periodically do not remove entirely the scale that has begun to form. There are also upon the market several various types of scale removers that are more or less successful, but even at that it stands to reason that there must be some more practical means either to prevent scale forming under any condition or to remove it readily if it does form. A properly directed attempt to work out an invention of this kind should prove remunerative.

Improved water feed regulators are also desired. For instance, under present conditions if any one of a battery of boilers should blow out a tube, a common water feed pipe being used for all of the boilers in the battery, all of the water will continue to flow, along the line of least resistance, to the boiler which is useless, whereas the boilers which really need the water cannot obtain it. Some kind of an automatic regulator should be provided to overcome this difficulty.

116. **FIRELESS COOKERS:** The rapidly increasing popularity of fireless cookers is undoubtedly due to the immense strides that have been taken in recent years in improving this modern invention. There is still however much to be done. This is true both in the general style of the cooker, or, in other words, its general construction, and also in such details as the insulating material used, the manner of heating, etc. For instance, cookers that are originally heated by electricity will undoubtedly come into general use, but in such case some means should be provided whereby the electric current is automatically cut off when the temperature in the cooker reaches a certain point. Means could also be provided whereby the circuit would be closed when the temperature becomes too low, although in such case there should also be mechanism whereby complete disconnection could be made whenever desired. Any improvement in this field, no matter how unimportant it may seem to you, is well worth looking into.

117. **CRUDE-OIL BURNER:** The United States and several other large nations have equipped a number of their war vessels with crude oil burners instead of with the old type of coal-burning boilers. In the oil producing sections of the country repeated attempts are being made to use crude oil in various forms of burners, but so far much difficulty has been encountered in producing one that will not become clogged up either by impurities in the oil or by the formation of carbon. Until such a burner is devised general use of crude oil for heating purposes can hardly be expected. It is suggested that some means be worked out by which the formation of carbon can be prevented or whereby it is blown out of the burner automatically so as to prevent the latter becoming stopped up.

118. **CARBON MONOXIDE:** Carbon-Monoxide is a deadly poison-

ous gas sometimes generated by gas burners of faulty construction, or that have been badly installed, resulting in improper combustion of the gas. Many deaths annually occur through inhalation of this gas, and it seems that under many conditions people are unable to get away from it quickly enough to prevent being overcome. The prevention of the formation of this gas is an important proposition at the present time, and although it would be stopped to a large extent by the careful installation of gas fixtures of all kinds, and also by the proper construction thereof, it naturally follows that some means should be found whereby a burner can be developed that would be absolutely fool-proof and that under all conditions would prevent the formation of this gas.

119. SMOKE CONSUMERS AND SPARK ARRESTERS: The production of perfect combustion in boilers, furnaces and the like would do away, of course, with all smoke therefrom. In the absence of some means whereby perfect combustion can be obtained there is, and will continue to be, a big demand for a practical smoke consumer. In spite of the fact that there are a large number of these patented and many of them have been placed upon the market from time to time, there is absolutely no practical device in this line that will meet all requirements, that can be used under all conditions, or that is within the reach of many persons who really need such a device. The railroads also need such an invention in the form of an attachment to or structural part of their locomotives.

The same is true with respect to devices that will prevent sparks from erupting from stacks of locomotives and buildings.

In connection with the damage done by smoke and the great loss in heating units through imperfect combustion, the following article taken from a recent number of "Current Opinion" and copied quite widely throughout the country by other publications is of considerable interest:

"FORTUNE LOST IN SMOKE.

"A Serious Study Being Made to Determine Ways to Keep Much Wealth From Going Up the Chimney.

"Almost $600,000,000 worth of property is annually lost in smoke in the United States. Fortunes even larger than that go up the chimney with the soot and the gases. Prof. William D. Harkins, who makes these startling statements, tells of one single chimney which literally spouted up $1,000,000 a year. It seems strange that so little is known in regard to smoke. Its economic importance is just beginning to be understood. The University of Pittsburgh has recently established a laboratory employing twenty-five specialists for the scientific investigation of this phase of our industrial life. The United States Bureau of Mines is studying the problem of preventing the escape in cities of the black smoke due to coal, and it has just established a special laboratory in San Francisco for the purpose of studying the smoke given off by copper-smelting plants. Chicago, we are told, is conducting similar studies of its smoke problem, and much work is done by industrial concerns here and abroad along similar lines.

"The work done so far is, however, entirely inadequate. The smoke inspector in the city of Chicago estimates that the annual damage

caused by the soot and other ingredients of smoke amounts to $50,000,000 in that city alone, and on the same basis, it is said, the damage in the United States as a whole reaches the prodigious figure of $600,000,000 a year. This, Prof. Harkins explains, does not by any means represent the entire loss, since the black soot which escapes and does a large part of the damage is really wasted coal. The coal lost in smoke amounts on the average to 10 per cent of all that is used."

120. INCREASING DRAFT OF STOVES, FURNACES, BOILERS, ETC.: While discussing the subject of improvements in heating devices, it should not be overlooked that, in spite of the large number of patents that have been granted upon various types of ventilators, cowls and similar structures, there is no device on the market that can be considered really efficient in increasing the draft, that does not necessitate positive operation such as by electrically driven fans, or something of that kind. A simple, practical construction that would be within the reach of the average householder, should prove commercially worth while.

121. THE INCANDESCENT LIGHT: Only a few years ago people dared not prophesy that the incandescent carbon light would ever be improved upon. Yet since then lamps have been made with tungsten filaments and are rapidly superseding the old carbon light. Experiments have produced lamps of higher efficiency than the tungsten

First Incandescent Light

filament will permit, but such highly developed lamps have not, as yet, become commercial practicabilities. Those who are in a position to work in this field should by all means do so, as the end is not yet in sight.

122. GASOLINE ILLUMINATION: The merits of gasoline as a fuel for heating purposes have long been recognized, but only lately have any noticeable forward steps been taken in connection with its use as an illuminant. In view of the fact that gasoline is easily gasified, it would seem highly probable that a successful system could be readily evolved by which the gasoline vapor, rather than the gasoline itself, could be burned perhaps in conjunction with an incandescent gas burner, similar to that used in the Welsbach system. The essential feature in a successful construction would be the means by which the oil could be readily gasified. A system of this kind would undoubtedly to a great extent supplant acetylene gas as now used.

123. SAFETY LAMPS: There are a number of safety burners for kerosene oil lamps in existence, but every one of them possesses great disadvantages. The question of simplicity here enters into the problem to a great extent. One idea that can be readily developed by

the mechanically inclined is the provision of some means whereby a lamp will be quickly and effectively extinguished if it is dangerously tilted, so that if the lamp should be dropped the oil in the reservoir will not become ignited.

While on the subject of extinguishing devices it is thought well to call attention to the fact that there appears to be some need at the present time for an automatic device that will extinguish the flame of a lamp at a predetermined time, or within a certain length of time after the extinguishing apparatus is adjusted.

124. LIGHT ADJUSTERS: Lighting fixtures can now be obtained for desks that will permit a light to be adjusted in any position and thrown in any direction. Similar structures, however, should be extended to various popular types of electric fixtures used in the lighting of rooms and particularly rooms of residences. The same is also true of the drop-cord type of light frequently found in offices. It would seem to be a simple matter to provide some means whereby the light could be raised or lowered as desired, and automatically held in the proper position.

125. SELF-LIGHTING GAS BURNER: In the first list of inventions wanted, published by me years ago, I called attention to the need for a gas burner that would be automatically lighted simply by the turning on of the gas. Some attempts have since been made to commercially develop such a burner. Although in some instances good results have been obtained in experiments, the fact remains that no burner has been placed upon the market that could be considered practical and efficient in every-day use. The experimental devices referred to would surely indicate that comparatively little improvement in this art is required in order to make the proposition a big financial success.

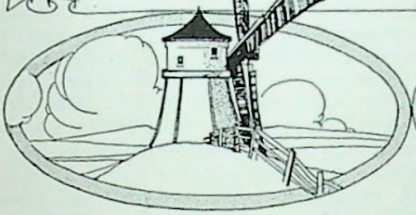
126. LIGHTING CHRISTMAS TREES: In the last few years electricity has come into use to a considerable extent in connection with Christmas tree lighting. The necessary apparatus for this, however, is more or less expensive and, moreover, is seldom available except in cities. Inasmuch as the danger connected with the old-style candles and candle holders is well recognized, it would seem highly practicable for some one to provide safety devices whereby candles can still be utilized.

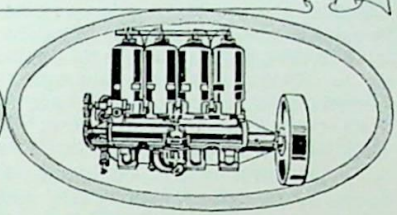
127. LAMP THAT WILL BURN CRUDE OIL: Reference has already been made under paragraph 123 to the need for safety devices on lamps or safety lamps. The remarks there set forth also apply with respect to a lamp that will burn crude oil or petroleum. An English Society, it is said, has offered a prize for the development of such a lamp.

128. GASIFYING ATTACHMENT FOR LAMPS: This is a field in which quite a number of inventors have worked during recent years, but in so far as the market is concerned the gas-burning oil lamp, other than those using incandescent burners, is noticeable by its absence. It seems clearly within the realm of possibilities for a small super-heating device to be incorporated in an ordinary oil burner so as to gasify the oil and burn the gas.

129. IGNITORS, POCKET LAMPS AND CIGAR LIGHTERS: Friction ignitors used for lighting gas, electric flash lamps for pocket use and pocket cigar lighters are products of recent years marketed with great financial success. Improvements in all are badly wanted and eagerly sought.

MOTIVE POWER





ALTHOUGH the broader, more important principles involved in this field probably can be improved upon only by those possessing special knowledge, a scientific and mechanical education, and considerable experience, many smaller improvements, particularly in connection with sundries, specialties, etc., have in the past been developed very successfully by those having comparatively little knowledge of the field in which they were working. What has proved true in the past will undoubtedly prove true in the future. This chapter therefore should not be passed by hastily by one possessing a working knowledge of any part of any source of motive power, for many of the improvements badly needed in this field can be worked out by any one who can develop a practical invention in any other field.

130. INTERNAL COMBUSTION ENGINES: There is no more difference between day and night than there is between the modern six or eight cylinder automobile engine and the "one-lunger" of a few short years ago. This is not only true with respect to appearance, finish, workmanship and efficiency, but particularly with regard to reliability, flexibility of control, ease of operation and lack of noise.

There is still, however, considerable to be done. The two-cycle motor, for instance, has never yet been developed to such a point as to make it practical for automobile use when in competition with the four-cycle type. This is principally due to its expensive operation and lack of economy both in fuel and in oil. Undoubtedly this objection can be overcome by structural changes.

Then again difficulty is always encountered in lubricating the cylinders of gas engines efficiently. Lubrication by gravity, force feed, vacuum, and by the splash systems, all have their drawbacks, and one can never be absolutely positive that his engine is properly lubricated in all parts. Frequently it is not so lubricated, and one suddenly wakes up to that fact, because of the smoke from the overheated parts or because of some other sign that damage has been done. There is a great need for improvement in this particular line.

131. CARBURETERS: The mere fact that some carbureters upon the market are more efficient than others, that some use less fuel than others, are more easily adjusted than are others and possess numerous advantages which other carbureters do not possess, is, in itself, sufficient evidence to prove that there is such a thing as improving an efficient device of this kind. This is a line in which there is great competition between manufacturers, and any patented device that provides a good sound "talking point," whether it really be a great improvement or not can usually be well promoted.

I know of no carbureter on the market that will not "flood" at some time and under some conditions. Neither do I know of any carbureter of the float-feed type that has the advantage of a needle valve that will not clog.

132. SPARK PLUGS: Although there are a large number of efficient spark plugs upon the market, there is not a single one that can be considered self-cleaning or that will prevent the formation of carbon thereon. Neither is there a single one that is so efficient as to always provide a hot spark that will never become short circuited under various conditions, nor do any possess means whereby they can be easily removed from the cylinders of the engine in which they are placed if they have expanded because of the heat.

133. STARTING DEVICES: Practically all of the modern automobiles, except those of the very cheapest construction, are provided with self-starting devices of one type or another. In my original booklet "Stepping Stones," I called attention to the need of an improvement that would accomplish that result. Although many of the starting devices on the market, particularly those of the electrical type, are highly efficient and, under most conditions, perfectly satisfactory, it stands to reason that this art, developed during the last three or four years, is still in its infancy, and undoubtedly many improvements will be worked out. In this connection attention is directed to the fact that few highly successful devices have been developed for use on marine engines. It seems that nearly everyone has had the automobile engine in mind. The marine field should not be overlooked by any means.

134. MUFFLERS: Undoubtedly the highest type of muffler at the present time is the Maxim Silencer, which is applicable not only to guns but also to the exhaust of internal combustion engines, and is so used to a considerable extent. In marine practice, under-water exhausts have been developed which muffle the engine effectively, but at the same time cause a back pressure which has a tendency to reduce speed to a considerable degree. Undoubtedly some one will work out means whereby gas engines can be made absolutely noiseless in so far as the exhaust is concerned, and at the same time tendency to back pressure obviated.

135. ROTARY ENGINES: The development of a successful rotary engine has apparently become as great an obsession with some inventors as perpetual motion has with others. There are quite a large number of patents upon this type of engine, both in the line of steam engineering and also in the field of internal combustion engines. Although various types of turbines are now in general use and have proved highly efficient, no practical rotary gasoline engine has been placed upon the market as yet. There is a big field for such a proposition, particularly in view of the fact that engines of the rotary type would undoubtedly prove more highly efficient when practically developed and would take up much less room than those of the cylinder and piston type. Invention and the expenditure of much money in this field cannot be encouraged unless you know what you are doing and are reasonably certain that you have a new principle well worth while.

136. PRIMING CYLINDERS: It is, at times, necessary to prime the cylinders of any internal combustion engine, no matter how efficient it might be. At the present stage of development, an engine when it becomes very cold must be necessarily primed before it will start. That is particularly true with respect to marine engines which

under many conditions are difficult to start after having remained idle for some time.

Instead of permitting liquid gasoline to flow into the cylinders through the customary priming cup, why not provide some easily operated method for spraying the gasoline directly into the cylinders? This could be conveniently located, whether the engine be in a motor boat or in an automobile. For instance, in the latter case it could be on the dash, within easy reach of the driver. Such a device would also render much more efficient many of the so-called self-starting devices now in use.

137. THE SUN MOTOR: Many authorities maintain that after we have used up our supply of coal we will have to rely upon the sun for motive power, and also for the generation of steam. Whether this is true or not, there is no doubt but what a highly efficient motor, depending upon the sun's rays for its successful operation, would prove a boon to everyone including the inventor. Several attempts have already been made with more or less success, and it is understood that there is now a motor in use in the vicinity of the Sahara Desert that has actually produced considerable power, but it will only operate under favorable conditions.

138. THE WAVE MOTOR: Whether or not any one will ever successfully develop a practical machine operated by waves, by the current of a stream, or by the flow of tides, is becoming a much mooted question with those familiar with what has been done in the past in this direction. Some of the inventions produced have been tested in a practical way, and some of them have been found to be operative and to produce a limited amount of power under certain favorable conditions, but not a single one of them has proved worth putting upon the market for the reason that there are too many conditions under which such motors would be absolutely worthless. The question is an important one, and a big one, and should anyone ever successfully develop it, he would undoubtedly be in possession of an invention of immense value and utility.

139. MOTIVE POWER FOR AEROPLANES: It is highly questionable if the aeroplane of the future will depend upon an internal combustion engine for motive power. The use of such an engine seems a crude expedient for a highly developed craft of the air, and undoubtedly the future will bring forth some other form of motor well adapted for this purpose. This may take the form of an electric motor, drawing its source of power from the earth by wireless, and then again it may take some other form. Roy Norton in his "The Vanishing Fleets" soars into the realm of imagination, and, for the purposes of his story, invents flying machines made of metal, which, when electrically charged, become radio-active and, because of their radio-activity (which can be directed forward or backward, up or down, at will) drives his flying machines at incalculable speed. We smile at such fancies today until we remember that the wild riot of imagination indulged in by Jules Verne in his "Twenty Thousand Leagues Under the Sea" is today an actuality in so far as his submarine boat is concerned.

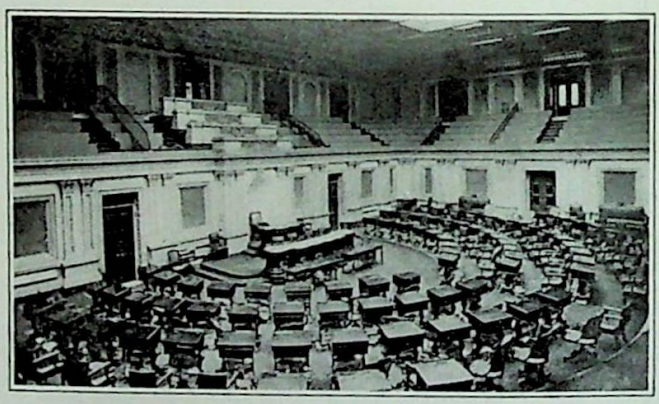
In the meantime, one would do well to develop a very light weight, very high speed, gas engine, adapted particularly for aeroplane use. Such an engine, in spite of its light weight and immense speed, must of necessity be of a durable construction, absolutely safe and efficient in operation, economical in fuel because of the comparatively small amount that can be carried by the aeroplane, and must be capable of maintaining its high speed for hours. A motor of this type

is in great demand, and not until it is developed will transatlantic aeroplane flight be a reality.

140. PERPETUAL MOTION: From time immemorial man has been racking his brains over the question of perpetual motion, and today, throughout this great land of ours, thousands of inventors, from the learned scientist to the humblest worker in overalls, are studying, tirelessly experimenting, groping for the solution of this problem that would render the lucky discoverer fabulously rich.

Is perpetual motion possible? Careful thought would seem to compel a negative reply. Friction and the laws of gravitation would appear to be insurmountable difficulties. This, at least, is the view which the United States Patent Office has adopted, and no patent will be granted upon a device purporting to be a perpetual motion machine—unless, of course, an actual working model is filed. Still, the question is not decided by this stand, for the Patent Office Examining Corps is very conservative. The Office formerly held it to be an impossibility for a machine heavier than air to fly, and it required the actual proof furnished by the Wright Brothers to shake this conclusion.

Many noted authorities agree that the secret of perpetual motion will be discovered sooner or later. Personally, I have the greatest faith in the American inventor. He has made this the foremost nation on earth. He has never yet failed to work out the countless problems submitted to him. Will he fail to solve the greatest question of them all?



U. S. Senate Chamber

NOVELTIES, TOYS AND MAIL ORDER GOODS

UNDER this heading are those little devices which are easily thought of, easily patented and as easily promoted. Novelties of various kinds, toys and devices that can be sold by mail, or by canvassing agents, undoubtedly form the majority of successes made by inventors at the present time. There is always a most insistent demand for improvements along these lines and anything new, novel, practical from the standpoint of the manufacturer, inexpensive when placed upon the market, or that will save time or labor, even to a slight extent, is well worth patenting.

141. **MISCELLANEOUS NOVELTIES:** Devices such as inkstands, paper weights, book markers, blotter holders, mucilage holders, pencil sharpeners, pen and pencil racks, cigar lighters, pocket ash trays, car ticket holders and the like can almost always be improved upon to financial advantage. Some of these ideas are necessarily protected, under certain conditions, by means of design patents, and these also are apparently promoted successfully without much difficulty.

142. **GAMES AND TOYS:** A great deal of money has been made during past years on simple toys of various kinds, and games which can be sold for a small sum. This has recently been particularly true of mechanical toys or, in other words, those operated by clockwork or having other means whereby they are rendered self-moving. These, however, are usually rather expensive. If the cost of manufacture could be decreased or the toys simplified it would undoubtedly be greatly to the patentee's advantage.

The Germans have long since recognized the large amount of money to be made out of new toys, and, for that reason, most of our new ideas in this line come from that country, although there is absolutely no reason why the American inventor cannot turn his mind in this direction to excellent advantage. The great European War has brought this fact home to us very forcibly.

143. **MAIL ORDER ARTICLES:** Uncle Sam's parcel post system has redoubled the demand for articles that can be readily sold by mail. As no particular suggestion can be made, it can only be said that such devices must necessarily be of a useful nature in order to be marketed successfully and, therefore, to be worth patenting.

144. **HAT-PIN POINT GUARD:** In many of the large cities there are now police regulations which compel the use of some kind of a guard on the projecting ends of hat pins. These laws prevent the use of hat pins altogether in the absence of such guards. Several of our states have already enacted such laws and several others have similar legislation under consideration. It is understood that Australia has had a law of this kind in force for some time past.

Although there are various kinds of safety hat pins, and hat-pin guards patented, the rapidly increasing use of such devices, necessitated in view of the above-mentioned laws, makes the invention of additional improvements highly desirable. Your effort should be directed toward producing a very simple guard which can be easily applied and removed simply with the aid of the sense of touch. Cost is a prime consideration.

145. **THE APPLICATION OF LIQUID SHOE BLACKING:** Every one is familiar with the means at present used for applying liquid shoe blacking, a "dauber" in the form of a sponge on the end of a wire being usually adopted for this purpose. The wire is easily bent and broken and the sponge becomes rapidly destroyed. Then, too, the blacking is frequently spattered on places where it is not supposed to go. Attempts have been made to devise some form of fountain brush designed to facilitate the application of blacking in liquid form but, so far, no successful brush of this type has been marketed. Here is a simple idea which can be easily worked out.

146. **WATCH WITH ALARM ATTACHMENT:** The now universally famous "Big Ben" was never designed for use by constant travelers. Some one should develop a watch which can be easily carried in the pocket and which at the same time would possess an alarm mechanism easily set and of sufficient loudness to awaken the average sleeper. Such a watch could also be used to remind the business man of engagements, etc.

147. **MASSAGE MACHINES:** I have a special request from a large manufacturer who desires an improved massage machine that can be used at home. There are quite a number of electric vibrators, and numerous massage machines driven by electric motors or by water power, upon the market. There still seems, however, to be a big demand for simple devices of this kind that can be readily handled by canvassing agents or sold through the mail. The cost should be kept as low as possible.

148. **SUBSTITUTE FOR THE HAT PIN:** Along a somewhat similar line to that referred to under paragraph 144 might be mentioned the advisability of working out a device that will entirely supplant the present-day hat pin which has many objectionable features. There are one or two hat fasteners upon the market that are proving commercially successful, but not entirely satisfactory to the wearer. It would seem to be a simple matter to fasten a woman's hat without the necessity of passing a long pin through her hair.

149. **CLOTHES PRESSING DEVICES:** There are upon the market a number of stretchers and pressing devices for trousers. There is much room, however, for improvement in this line. Many of the present devices are difficult to adjust. Many of them are not well adapted for home use, but cannot be easily carried from place to place in one's trunk or suit case. Others are absolutely [illegible]. I have in mind a device that can be rolled into a small space and that will press a pair of trousers satisfactorily, while [illegible] quite successful as well as portable.

[illegible] upon the market as far as known that will [illegible] in proper shape. There is almost an [illegible] to work to excellent advantage.

150. **[illegible]:** It is a very easy [illegible] in the handle or center [illegible] to permit the same to be folded. When [illegible] a suit case small and a folding handle permits [illegible] a small space. It has been found

impossible, however, up to the present time to produce an umbrella of standard size that can be so folded and packed away, this being because of the fact that no practical method has been discovered by which the ribs can be made either telescopic or capable of being folded. This should prove a profitable field if you can work out the proper kind of an idea.

151. WIND SHIELD FOR MATCH BOXES: The difficulty of lighting matches in a strong breeze would be greatly minimized if some kind of a device could be attached to the match box that would serve the purpose of an effective wind shield. This has already received some attention from inventors, but the resulting inventions have proved entirely inefficient because of the small area of the shield and consequent failure to guard the match from the wind. It should be possible to provide an ordinary match box with a shield which could be opened or extended so as to prevent the match from being blown out.

152. COMB CLEANER: For many years there has been a demand for some kind of a device, either in the nature of a tool, or in the form of a small machine, that will clean hair combs effectively and quickly. Here is a big field in which there does not exist a single successful device. Not only is such an invention badly wanted in all barber shops but also they could be put into use in the household if the cost would not be too great.

153. PICTURE HANGERS: The two present methods of hanging pictures are objectionable, one (using a hook and molding) because of the long unsightly wire, the second because of the way in which it mars the walls, the difficulty of properly placing the nail, and the fact that the latter frequently pulls out after a little use. A simple hanger that would avoid these objections would prove a boon to the average housekeeper and could undoubtedly be handled easily from the commercial standpoint.

There is also a considerable field for picture hanging devices for use in art galleries and similar places from which expensive pictures have during recent years, been stolen. There should be some means of locking the pictures to the wall to prevent their removal.

154. TIP FOR BILLIARD CUES: Chalk is used on the tips of billiard cues in order to prevent the leather tips from becoming too slippery. Some means is wanted to do away with the dust incident to the use of the chalk. This can be accomplished either by substituting some other material for the chalk, or by the provision of a cue tip that will not wear slippery under any conditions—in other words, providing some other material than leather for the tip.

155. SUBSTITUTE FOR THE CORKSCREW: The ordinary every-day corkscrew is an unscientific, hit or miss device for which an efficient substitute should be devised. Means should be found by which a cork could be extracted from a bottle without breaking it up and without permitting portions thereof to fall into the bottle.

156. REMOVING CREAM FROM MILK BOTTLES: Many housekeepers make a practice of pouring off the cream from their bottles of milk every morning. There is no way in which this can be done accurately, and one either pours off too much or too little, which results either in cream remaining with the milk or in milk finding its way into the other receptacle with the cream. A simple device that would permit the cream to be readily withdrawn from the bottle without disturbing the milk, or without mixing the two, should prove well worth while.

157. TEETH CLEANING DEVICES: The fact is becoming more and more appreciated by the public that the present method of cleaning the teeth by means of a lateral motion of a brush thereacross is inefficient, the bristles of the brush not working into the crevices between the teeth under ordinary conditions. The solution of this difficulty has been attempted by providing a rotary brush, but up to the present time this has not been successful for several reasons, the principal one being the fact that a practical rotary brush of small size, with a simple means for producing the rotary motion, has not been developed. When working in this field it would be well to bear in mind that it is absolutely necessary to provide means whereby the brush will not come into contact with the gums. It is quite possible that this same question can be solved by some other means than the rotary brush, and it is therefore suggested that the entire situation be taken into consideration before attempting the solution of the question.

158. PREVENTING THE THEFT OF WHIPS: There have been several patents granted upon complicated whip-sockets with lock attachments by means of which the whip can be locked in the socket when the vehicle is left standing, thus preventing the removal of the whip until the socket is unlocked and the whip released. The basic idea involved in such patents is a mighty good proposition, but the structures that have been developed up to the present time are entirely too complicated, and for that reason alone the patented devices have never been placed upon the market. Development of this idea should result in a successful, practical and therefore financially profitable idea. At the same time it should be remembered that "there is more than one way to skin a cat," and there may be other ways to lock whips without providing a locking member on the socket itself.

159. KEYLESS LOCKS: There has, of late, been a great demand for some simple keyless padlock, a letter from a large manufacturer of hardware novelties and the like recently received by me on this subject reading as follows: "We have been looking for some time for a keyless padlock which could be manufactured for about twenty-five cents. . . . You no doubt have articles on the above order brought to your attention by your clients. We wish you would keep us in mind and give us the first refusal on anything which looks good to you from the manufacturing and selling standpoint. We are in the agency business covering the entire United States and specialize on quite a few articles. Anything we take up means big business."

There are, of course, keyless padlocks upon the market and there are quite a number of them patented, but it seems that all of these are either held by competing companies or else are not satisfactory to this concern for some reason.

There is also a growing demand for keyless locks for use in doors in residences and in other places where it is not convenient to use a key. There should either be a combination arrangement by which the lock can be released only by one having knowledge of that combination, or else there should be some concealed button or movable side or something of that kind which only the person or persons in the secret would be likely to operate successfully.

160. IMPROVED FOUNTAIN PEN: Fountain pens now upon the market almost all rely upon a specially prepared writing fluid for their efficiency. If anything but "fountain-pen ink" is used in them they immediately become clogged up. There are no pens, as far as known, that can use an absolutely black ink without becoming

stopped up in a very short time. Some means should be provided by which the feed mechanism of a fountain pen could be regulated so that it could use either a thick black ink or a thinner ink such as now used.

There are not more than one or two "non-leakable" fountain pens upon the market, and even they leak occasionally. This is something which should be remedied. There is also a demand for pens which can be filled more easily than those now in use.

161. SELF-THREADING NEEDLE: For many years attempts have been made to develop a needle that can be more easily threaded than the old-fashioned type in common use. Practically all that have been marketed have been withdrawn after a little while, as they have proved unsuccessful and have not been able to meet all conditions imposed upon them. There is today no more reason why such a needle cannot be developed successfully than there was twenty-five years ago, and the demand now is bigger than it was then.

162. ANTI-NICOTINE PIPE: Pipes have been provided with tortuous passages, traps of one kind and another, recesses for sponges, etc., in attempts to develop a proposition that will prevent nicotine from finding its way into the smoker's mouth. It is not only possible, but highly probable, that such a pipe will be developed at almost any time, so as to overcome the objection to the ordinary type without making a construction too complicated to be manufactured cheaply and at the same time provide a device that will destroy nicotine or prevent its passage into the mouth.

163. MILK BOTTLE CAP: Many attempts have been made during the past to find some efficient substitute for the pasteboard disk so widely used as a closure for milk bottles. This is frequently difficult to remove from the bottle without destroying its value as a closing device, or without forcing it into the bottle itself. Moreover, the ordinary pasteboard cap does not prevent the contents from flowing out if the bottle should be upset or severely jarred. There is quite a demand for a closure that will overcome these difficulties.

164. CURLING IRONS: Any novelties in the way of toilet articles of any kind for ladies' use usually find a ready market. For instance, there is a big field in the way of improvements in curling devices for the hair, that being particularly true of that type depending upon the application of heat for its efficiency. There should be some means provided so that the curler cannot be overheated or so as to notify the user when the temperature becomes too high for safe use.

165. PENKNIFE SHARPENER: There are very few persons who can properly sharpen a penknife, many using a grindstone for this purpose, which, although it gives a sharp edge, destroys the temper in the blade. A simple device of small size should be developed by which a penknife can be sharpened very easily by any one.

166. SHADE-ROLLER HOLDER: There has long been a field for an adjustable mechanism to hold window shades. The present brackets used for the purpose are difficult to fasten in the right positions, without marring the woodwork, and frequently pull out. Adjustable brackets that can be easily and quickly applied to the window frame and then adjusted to properly hold the roller can, when protected, be easily promoted, this fact having been already demonstrated by the successful marketing of several devices in this field.

OFFICE AND STORE APPLIANCES

THE "high cost of doing business" is now becoming as familiar a term as the "high cost of living," this being in spite of the fact that the last few years have seen a greater and more rapid advance in the development of time and labor saving devices, methods of filing, and inventions of all kinds designed to increase the efficiency of employees, economize space, save time and labor, etc., than was accomplished in a dozen or so years theretofore. Here is a field in which the demand is absolutely unceasing and is so well recognized that any practical device that may be put forward by an inventor can be handled in a commercial way with remarkable ease.

167. CASH REGISTER: The modern cash register is one of the greatest inventions ever devised. In spite of the fact that it is used universally it remains an extremely complicated proposition, and although very efficient for all that, there is no doubt but what intelligent efforts, properly directed, would result in the development of improvements. These improvements at the present time are usually bought up by the National Cash Register Company, who practically monopolize the field.

168. FILING DEVICES: In an office where there is a large amount of detail work to be kept track of, or where there is a great volume of business coming up for attention from time to time, it is no easy matter even with modern filing devices at hand, to develop a system which is absolutely infallible and, at the same time, will not occupy an immense amount of space. This is true not only of filing correspondence and other valuable papers, but also of names and addresses of customers and clients that have to be referred to frequently. The same also applies to the filing of bills, invoices, cancelled checks, notes, drafts, and all other papers of a like nature.

169. REPRODUCING FORM LETTERS: There are just two devices on the market that can be considered highly efficient and successful for the purpose of producing imitation typewritten letters, these being the "Multigraph" Machine and the "Flexotype," which is now manufactured by the same company that owns the patents on the first mentioned. All attempts to develop devices that could compete with these two duplicating machines have proved unsuccessful and have resulted only in the production of inefficient structures which have not proved commercially successful even when sold at a greatly decreased price.

It is highly desirable that means be provided whereby the type in these machines can be more readily set up and redistributed and, in so far as the multigraph machine is concerned, whereby several different letters could remain set up as long as might be desired, so

that they could be used at any time without the necessity of resetting them.

There are a number of machines on the market known as "duplicators," "mimeographs," etc., but these all depend upon impressions, usually made on wax paper, from a typewriter for their efficiency. It requires considerable skill to make the necessary copies to be duplicated, and these can then be used successfully for only a few dozen impressions. There is no reason why an entirely new principle cannot be found and applied in this field with excellent results.

170. MACHINES FOR SIGNING SIGNATURES: The busy man is now looking for some kind of a machine that will sign his name for him upon a large number of letters, checks, etc. This is particularly desirable by large corporations and companies who have a large number of dividend checks, etc., to be signed and mailed at one time.

171. LUNCH ROOM FURNITURE: The so-called "quick" lunches throughout the country are now desirous in many instances of installing automatic devices for dispensing food, that being particularly true of standard sandwiches, soups, etc. There is also demand for a container for lump sugar, which is now simply placed in a large bowl at a central point in the lunch room, which, of course, is very unsanitary under any conditions. An automatic device for making coffee should also be devised. It is now necessary for the coffee urn to be closely watched, new coffee added from time to time by emptying same into the urn, additional water run in, and similar things which take time and require care. An automatic apparatus or an urn having a reservoir for new coffee that can be emptied in very easily, should be patented and handled with commercial success.

172. WRAPPING MACHINES: The movement for sanitary handling of food stuffs has grown to such an extent that there is now much demand for machines that will wrap various edibles so as to get them from the manufacturer to the consumer with as little handling as possible. This is particularly true of bread. There is need for a machine that will take loaves of bread just as they come from the bakers' ovens and wrap them (automatically as far as possible) either in paper or some similar material.

A similar machine is desired to wrap candies now wrapped by hand in paraffine paper. Combined with the wrapping mechanism could be means by which the candy could be drawn out and cut off into proper sizes and then wrapped without ever coming into contact with the hands of the operator.

173. POSTAGE STAMP AFFIXER: In an early edition of my booklet, "Stepping Stones," I called attention to the fact that a device of this kind should prove commercially successful. Since that time there have been one or two successful devices patented and marketed. For use in these machines the United States Post Office is now selling stamps in rolls, and this will greatly facilitate the development of a more successful apparatus. A practical invention of this kind would find a great sale if it could be sold at about $10 or $15. It should be adapted not only for moistening stamps but also affixing them to the envelopes securely and neatly, as well as rapidly.

174. OPENING MAIL: Many attempts have been made to market machines supposed to be satisfactory envelope openers, but after short careers these devices have invariably been dropped as being unsatisfactory. This is largely because of the fact that envelopes are of many different sizes and the contents are of many different thicknesses. No successful machine has been devised up to the present

time into which the envelopes can be fed as they come without reference to size, shape or thickness, and which will open those envelopes cleanly and without marring the contents. Here is a big field for some ingenious person.

175. SEALING THE MAIL: It is an equally difficult proposition to find a successful device on the market for sealing the mail. A number of these have been tried or demonstrated in this office, but not a single machine has come to my attention, as yet, that can be relied upon to seal all envelopes as they come. Most sealers apply too much moisture, so that before it dries out the envelopes become opened. Still other sealers do not apply sufficient pressure to the flap of the envelope after it is moistened to make it hold securely and practically all are ineffective when the envelope is thick. Here also it would appear that a successful device could be manufactured and sold for about $10 or $15 with the greatest of success.

176. IMPROVED SIGNS: There is always much demand for improvements in advertising devices of all kinds, that being particularly true of attractive signs for use on store fronts, or in similar places where they can be exhibited to advantage.

177. TWINE AND BAG HOLDERS: Although there have been many things patented for holding balls of twine, none of them have proved satisfactory. As a general rule the twine cannot be withdrawn from such patented devices with the same freedom that it can from a ball unhampered by any holder, yet in the latter case much twine is wasted and the ball frequently becomes misplaced.

There is need also of some kind of a holder or dispensing device for paper bags of different sizes. In the present bag holders withdrawing one bag usually means withdrawing several, or a large number of, others not wanted.

178. MONEY CHANGING MACHINES: There are two kinds of devices that are needed for changing money. In the first place cashiers of business houses and bank clerks need handy machines that will enable them to quickly make change for customers. There are some devices of this kind in use which give more or less satisfaction, but no absolutely practical device has been developed.

In the second place there should be developed a slot machine, such as could be put in public places, and which would change money for a small premium. For instance, if one had a quarter and desired smaller change he could drop it in one of these machines and it would return to him, let us say, a dime, two nickles and four pennies, the machine in this way making one cent on the deal. Machines of this kind would provide a large source of income, and a successful apparatus would be of great value.

179. DEADENING THE NOISE OF TYPEWRITERS: Many devices have already been placed upon the market designed to take up the vibration of typewriters or decrease the noise, and some of them are more or less satisfactory. Nothing has, as yet, been devised, however, that is as good as the heavy felt pad. This pad, however, is rather unsanitary, quickly becomes dirty, and usually is compressed after short usage so that it is of no further value. There should be some means built into the machine itself that would make it as silent as possible, but in the absence of such a means any simple apparatus in the form of an attachment would find a big field.

180. AUTOMATIC TYPEWRITER CARRIAGE: It is not a very difficult proposition to get up a mechanism that will automatically return a carriage to the beginning of the next line. The problem be-

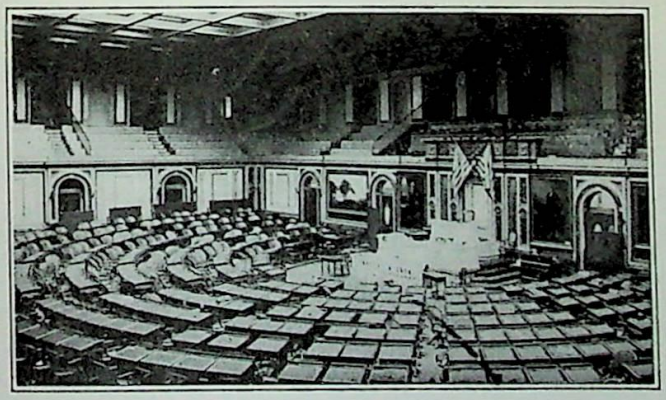
comes a hard one to solve, however, when you take into consideration that the carriage has to begin its return at the right moment, so as to properly divide words at the end of the line that cannot be finished on that line, that it also has to space automatically, and has to start writing on the next line in the proper position. If something could be found by which the carriage could be returned without the necessity of the operator pushing it back manually, almost any typewriter manufacturer in the world would be willing to pay a fortune for the idea.

181. UNDERSCORING DEVICE FOR TYPEWRITERS: When a letter, word or line is to be underscored the same ground has to be covered twice, the letter, word or line first being written and then gone over a second time and underscored, the underscoring being placed under each character separately. It is not impossible to devise means that can be easily and quickly thrown into operation so that letters, words or entire lines can be automatically underscored as written. It would save a great amount of time and therefore would be valuable.

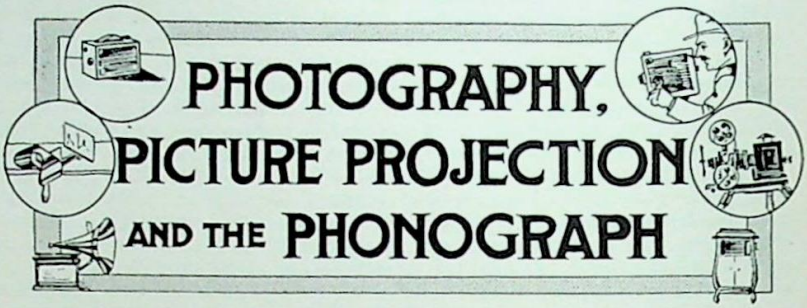
182. RIBBONLESS TYPEWRITER: Sooner or later some one will find some means by which the ribbon on typewriters can be eliminated. This will doubtless be in the form of some automatic device so that the type will be inked in somewhat the same manner as on printing presses at the present time. It is needless to point out the manifold advantages of such a structure and useless to attempt to estimate the value thereof.

183. LINE AND POSITION INDICATOR: A simple indicating device for typewriters that will enable the operator to easily adjust paper in the carriage in the desired position, that will clearly show how much space remains on the paper to be written upon, and that will permit the paper to be withdrawn, say in the middle of a line of writing and then accurately replaced, is greatly desired and badly needed.

184. NEW ARTICLES OF STORE FURNITURE: Furniture of all kinds for store and office use usually finds a ready market where it possesses features of advantage. For instance, new display racks that will hold various articles of merchandise so as to show their merits clearly, new show cases for similar purposes, containers for various articles, such as bins for flour, sugar, etc., and anything of a like nature, find a ready and quick market.



U. S. House of Representatives

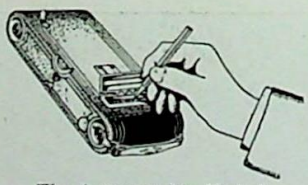


PHOTOGRAPHY, PICTURE PROJECTION AND THE PHONOGRAPH

THE development of photography has been very marked from the time of the daguerreotype and tintype of a few years back to the color motion pictures of the present time, and yet the art might be said to be in its infancy. The field of photography is one with which everyone is more or less familiar, in which everyone is interested, and in which any improvement to cameras, negatives, prints or incidental apparatus is well heralded when in the experimental stages and when given to the public is sought and adopted.

This art was thought to have reached its highest point of development when the glass dry plate was made a success, yet the discovery of the flexible film has changed the entire field and made possible the motion picture. This film was invented by a New Jersey pastor, the Rev. Hannibal Goodwin, who was so poor that he was compelled to secure financial aid to protect his invention. Yet, to the present time, a single one of the several companies manufacturing film under this patent has paid $25,000,000 in royalties to the holder of the patent right.

In 1914, H. J. Gaisman, a young man of Brooklyn, N. Y., was paid $300,000 in cash by the Eastman Kodak Company for his attachment by which one can write his name or a memorandum upon the edge of the film at the time of exposure. The device is still rather crude.



The Autographic Kodak

In connection with the art of photography the mind naturally turns to the motion picture, and this would seem to be the broadest field for invention in this line at the present time. The motion picture camera has not been brought to a high state of development, the projecting machine is imperfect, and the film can be improved. Every motion picture operator and a great number of inventors are active in this line. Consequently it is advisable that protection should be procured upon ideas conceived in this line as soon as the invention has been reduced to a practical form.

185. A CAMERA THAT WILL TAKE PICTURES IN NATURAL COLORS: With regard to the photographic representation of color, the results of a great mass of research are hardly successful and have only a scientific interest. At the present time when it is desired to obtain the natural colors upon a photographic print or upon a motion picture film, the tints are, with few exceptions, applied by hand. However, this process is slow and costly, the appearance of the finished product depending in a great measure upon the skill employed. It is certain that an immense fortune will result to the person who discovers the successful process.

186. LIGHT PRINTING PAPER: The largest manufacturer of cameras and supplies has said that, to the amateur, more than half the pleasure of photography is lost when he permits his developing and printing to be done by others, and yet the amateur is not given the proper facilities to do this work with any certainty as to the result obtained. A developing apparatus which will give a uniformly good result in any hands and under all conditions is wanted for this use; even more in demand is a printing paper which can be printed and handled in daylight and developed in clear water, or a simple solution as salt and water, or hypo and water, to give a clear brown or gray photographic print which will be permanent.

187. AMATEUR ENLARGING CAMERAS: Immediately a particularly good picture is obtained a desire is created to make an enlargement. Those devices which have been made and sold for home use are so constructed that each negative is treated in an identical manner, thus making it impossible to obtain the soft variation of color value which means so much to a successful enlargement. It would seem that an enlarging device of a simple nature constructed to permit adjustment to suit the individual negative should overcome this undesirable feature, and it is also suggested that improvement can be made in the manner of holding the paper in place.

188. SHUTTERS: Great difficulty is experienced in the proper operation of the shutter of a camera in damp weather or where it is exposed to salt air. Anyone who can discover a material to be used for the leaves of the shutter, or a paint, or other coating, to be applied thereto to prevent the impairment of the operation by moisture, or who can devise a shutter of such a mechanical construction that this binding action cannot take place, should find no difficulty in disposing of the invention and the patent right thereon.

189. MEANS PERMITTING LOCATION OF PROJECTOR BEHIND SCREENS: The many fires, with resulting panics, in motion picture halls where the projecting apparatus is located back of the audience has caused considerable agitation with a view to requiring that the apparatus be located at a point away from and out of the view of, the audience so that all danger will be precluded. With the present development in this art the only logical solution seems to be the placing of the projector behind the screen. It would seem that a clear projection with the apparatus so placed should not be difficult.

Naturally the screen must be transparent to a certain extent, but just the treatment or coating which it should receive to permit this transparency and yet to hold and reflect the picture projected is the question. There is no reason why experiments along this line cannot be just as well conducted with the small toy "magic lantern" as with the complicated and expensive motion picture projecting apparatus.

190. PREVENTING FLICKER IN MOTION PICTURES: One of the most serious objections to the motion picture and one which is

causing the medical profession to make vigorous protests is the flickering or vibrating of the image as shown on the screen. While the camera is perhaps the logical point at which to start in the elimination of this flicker, yet any refinement in the projecting apparatus which will aid in accomplishing this desired result will not be passed over by the manufacturers.

191. PREVENTING FILMS FROM BREAKING, AND REPAIRING SAME: While the material of which films are constructed is reasonably flexible, yet, under certain conditions, it is very brittle, and the breaking of this film when passing through the projecting machine is an ordinary occurrence. Why could not some device be developed which would automatically stop the winding of the film immediately a break occurred, would grip the two ends, insert a solvent therebetween and then, by exerting pressure upon the two fractured ends, weld the film to again present a continuous structure? To one familiar with this art, the working out of such an idea would not seem to present insurmountable mechanical difficulties, and this invention should be of more than ordinary value.

192. AUTOMATIC SPEED ADJUSTER: The placing of different scenes upon the same film, the original exposures of which were made at different speeds, and, likewise, the combination of the work of two or more camera men upon one film, causes a variation in the result obtained when the picture is projected, and requires the operator to govern and carefully regulate the speed at which the film is fed through the projecting apparatus. As this operation is manual, the result obtained is determined entirely by the skill of the operator. There seems to be considerable demand for some automatic regulating mechanism to accomplish this result.

193. FILM CUTTING DEVICE: When a film becomes accidentally ignited it is at a point passing through the projector, and if the flame can be confined to this portion the damage will be slight. However, the film burns very fast and the flame quickly finds its way to the entire reel. Some device should be provided to automatically cut off the film at a point adjacent the box into which the film is wound from the projector and also that from which the film is unreeled, the opening to each of the boxes being closed so that the flames will be confined to that portion actually within the projector apparatus.

194. FIREPROOF FILM: The demand for a film which will be fireproof, or will burn very slowly, is constantly increasing, and reports show that it is only a matter of a short time until legislation will be passed to require that fireproof film be used in all public exhibition of motion pictures. The film now in use, imperfect as it is, has by its patent protection earned an enormous sum in royalties, and there is no reason why a fireproof or slow-burning film, if properly protected by a strong and "loop-hole proof patent" should not prove just as valuable or more so.

195. SOUND-MAKING DEVICE. The establishment of the thousands of motion picture show places in all parts of the country has created a demand for some simple apparatus to produce the more ordinary sounds, as the wind, the firing of a shot, the galloping of horses, etc. This should prove a particularly profitable field for invention, if a machine can be provided capable of easy manipulation at the proper moment.

THE PHONOGRAPH.

The development of the phonograph by Edison to the point where the cylindrical record of wax was used was a broad step from the first

crude device, but the discovery of the successful disc record by Berliner, Bell, and co-workers was another great advance and has caused the disc record to almost entirely supersede the cylinder. All that Bell and his associates did was to adapt the principle discovered by Edison in his cylindrical record to a flat disc, yet the amount realized from the direct sale of the right to the invention is almost beyond belief, it being, as furnished to me by the director of Dr. Bell's laboratory, $400,000.

While the phonograph is, in its popular sense, considered as an instrument to entertain, the commercial developments and use must not be overlooked. For the most part, experiments in the development of a commercial machine have been with the cylinder record, but as a better reproducing result is obtained with the disc record, right here is an opportunity for a sweeping improvement in this line—a machine of the disc type arranged to record and reproduce.

196. ELIMINATING RASPING SOUND: Improvement in the sound box and the use of the wood horn have in a great measure eliminated the metallic sound once so noticeable, but the harsh, rasping sound, while it has been reduced, has not been overcome. Considerable has been done in the way of experimentation upon both the needle and the sound box but with only limited success, and meanwhile the rasping has continued, to be eliminated by some future inventor who will undoubtedly derive a considerable profit from the manufacture or sale of the invention.

There would seem to be considerable demand for some attachment to modify and regulate the tone power of the phonograph—some experiments have been made along this line by placing devices to break up the sound waves in the throat of the horn, but without entire satisfaction.

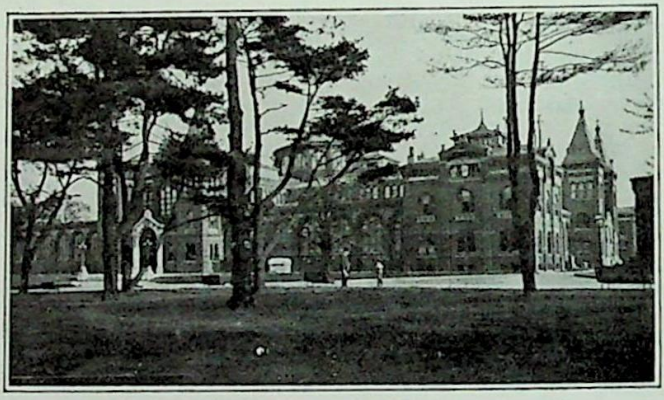
197. AUTOMATIC STOP: An automatic device which will positively stop a phonograph upon the completion of the record without the necessity of manual operation is in considerable demand. Several automatic stops have been devised and have been used to some extent, but each requires a mechanical adjustment for each individual record, and to properly make this adjustment it is necessary to play at least the end of the selection. Electrical or mechanical means to stop the record immediately the playing has ceased should be provided. One suggestion is a metal pin inserted through the record, at the end of the selection thereon, engageable by the needle to, in some manner, complete an electric connection to shut off the motor. There would also seem to be a field for an attachment which could be easily applied to phonographs now in use.

198. INCREASING SOUND: It is desired to increase the sound to a point as near the tone volume reproduced as possible. Some such means is particularly needed at the present time, as the phonograph is being used very extensively to furnish dance music and in other connections where a full volume and well-accentuated tone are required.

199. AUTOMATIC NEEDLE-CHANGING DEVICE: Some device which will automatically change the needle after the completion of each record, either in the form of an attachment to be applied to the machine by each individual user, or a mechanism to be constructed in the machine as built at the factory, is particularly needed. Such a device as this might be either electrically or mechanically operated. If mechanically operated, it could be actuated from the motor used to revolve the record. It is thought possible that a needle-changing de-

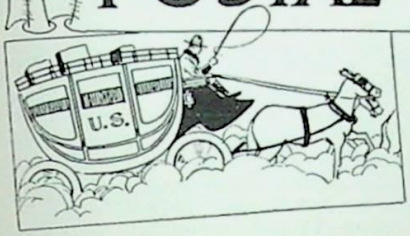
vice could be constructed in connection with an automatic stop, and so arranged that the operation of the stop would cause the actuation of the changing mechanism.

200. CONTINUOUS RECORD: With the phonograph and the record therefor constructed in the present manner, the size of the record is necessarily limited, with few exceptions a record not playing for a longer period than four minutes, thus making it impossible to reproduce any considerable part of an opera, or a selection of greater than average length. If a record could be devised, perhaps somewhat along the line of the present motion picture film, which would make possible the reproduction of an entire opera or other lengthy rendition, this would open up an entirely new field to the phonograph. The invention of the disc entirely revolutionized this art as developed around the cylinder record, and it is believed some further advance which will permit of unlimited reproduction will cause almost as great a change and will bring a profit to the inventor equally as great as, if not greater than, the invention of the disc record brought to Bell and his contemporaries.



Old National Museum

POSTAL SERVICE



THE United States Government pays excellent prices for any new ideas adopted by it. The opportunities for good ideas in the handling of mail matter are not limited to clerks in the Postal Service by any means, but any who can devise good improvements should do so and secure the proper protection on same as soon as possible. There is a most excellent opening for any one who can improve our present methods of, or apparatus for, collecting, transmitting, and distributing mail.

201. TRANSFERRING MAIL TO AND FROM RAPIDLY MOVING TRAINS: For many years the Patent Office has been granting a large number of patents upon devices designed to transfer mail to and from trains which are traveling rapidly. As yet, however, none of these devices have met with the approval of the Post Office Department and the railroads to such an extent that they have been adopted. At the present writing the railroads are still delivering mail to small stations by kicking off the bags and scattering the contents over the landscape, and are still catching mail from the station by means of the old fashioned hook, which sometimes pierces the bags, and always mutilates the contents thereof if anything happens to be in the vicinity of the hook where it catches or grasps the sacks. There is absolutely no doubt about the demand for an invention of this kind on the part of the Post Office Department. That is just as true today as it was several years ago when William Jennings Bryan in his paper "The Commoner," stated that any one who would invent this device could become a millionaire. Inventors should remember, however, that in order to be adopted devices of this kind must not be too costly. They must be adapted to catch not only one bag but several if necessary. They must be automatic in their operation and they must not wear out or mutilate either the bags or the contents. Practically all devices that have been patented in this field will do the last-mentioned thing.

202. PACKAGE TIES: Time after time the Post Office Department has taken steps to cut down the expense of the great amount of twine used for tying up mail matter, etc., by the adoption of some tying device that would permit the same twine to be used over and over again. This tie would, of course, have to be a very small, simple construction and something adapted to lie very close to the package upon which it is placed. It would have to facilitate the tying of packages and would have to hold the ends tightly and firmly, although at the same time in such a position as would permit them

to be easily released. A number of patents have been granted upon devices designed for this purpose, but none have met the approval of the Post Office Department as yet. Someone some day will be lucky enough to hit upon an ingenious idea that will fill the bill satisfactorily, and it will mean a fortune to him.

203. TRAVELING MAIL BOXES: These are particularly desired in rural districts. The mail box on the farm is frequently a long distance from the house. It would seem possible to get up some structure which could travel on wires or under ground and which would be set in motion by the postman after depositing mail therein. The box could then travel direct to the house, thus saving the time and trouble of making trip after trip to the box in all kinds of weather.

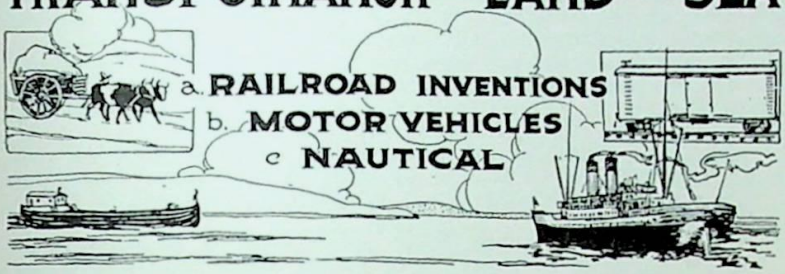
Some thought has already been given to the possibility of doing away with rural mail carriers by providing a traveling structure that will drop mail at the proper places automatically and will travel the entire route and return to the Post Office. For instance, a rural mail carrier has, let us say, fifty people on his route to serve. Instead of sending him in his wagon there should be provided a traveling box-like structure in which this mail could be placed and which would travel on a track or on wires along the same route, automatically dropping off at the various boxes along the way any mail it might have to be deposited in that box. This sounds like a fantastic dream, but it is in no way impossible and the day is not far distant when such a device will be put into practical operation.

204. STAMP VENDING MACHINES: Several years ago the United States Government tried out a couple of stamp selling machines in this city. It was found, however, that these machines got out of order and were easily cheated, and they were withdrawn from service after only a few days' trial. This leaves this great field totally unfilled, and it will remain unfilled until some one comes along with a machine which cannot be cheated, that is sufficiently practical not to get out of order, and that the government can afford to put out in the street or in prominent places where stamps can be sold therefrom. A machine which is more or less satisfactory is at present being used by the American Red Cross Society for a similar purpose.

205. SUBSTITUTE FOR CORD AND TWINE: Reference has already been made to the fact in paragraph 202 that the great expenditures for twine used by the Post Office would be greatly decreased if means could be provided for using the same twine time after time. A still better plan, however, would be to substitute something else for cord and twine. Rubber bands cannot be considered, as these are even more expensive. The subject is well worth the most careful thought and attention.

206. PARCEL POST CONTAINERS: The new parcel post law has opened up a big field for new ideas in the way of containers, wrappers and the like. There is particularly a demand for a package in which eggs can be safely shipped. A recent edition of the Chicago American referred to this need and the same is also true of the St. Louis Post Dispatch. The latter states that $45,000,000.00 is now lost through breakage of eggs in shipment and adds that Dr. Melvin of the Department of Agriculture says that, "The safeness of the egg shipment is the great obstacle in the way. No container that exactly fills the bill has been found. If the container is secure it weighs too much; if light it is not secure."

TRANSPORTATION ON LAND AND SEA



FROM the days of Adam and Eve the question of "how to get there and back" has been a daily reality. Originally, however, there was nothing to do but walk. Then beasts of burden were trained for transportation purposes. Subsequently vehicles of various types were drawn by animals. Then boats were developed for transportation over water and have gradually taken the steps by easy stages to the immense vessels of today. In the meantime transportation by steam-operated trains came into existence and this, also, has been rapidly developed until now we have the powerful electric locomotive, and a last step of transportation by flying machines is rapidly coming to be a usual occurrence.

The very fact that transportation, in one form or another, is an absolute necessity has made this field of invention immensely popular from time immemorial. Improvements are daily taking place, and there is no more active and profitable field than this.

(a) RAILROAD INVENTIONS.

207. THE MONORAIL CAR: Some very successful experiments have been made at different times in connection with the development of a vehicle having only two wheels, placed in the same plane, running on the same track, the vehicle being provided with mechanism that will prevent it from being upset, or, in other words, that will render it stable. The greatest success in this line has been achieved by providing the car with gyroscopic mechanism. This idea, however, is still in its infancy and has not been sufficiently developed as yet to be a commercial proposition. Improvements are being worked upon and undoubtedly in the near future a monorail system will be developed that will come into practical use.

208. AUTOMATIC TRAIN CONTROL: There has been a great deal of agitation within the last couple of years in connection with an automatic device for stopping trains at certain times. There have been quite a large number of patents granted upon devices in this line but apparently the inventors thereof were practically all unfamiliar with the requirements and, consequently, no devices have passed the thorough tests which an idea of this kind would have to pass before it could be adopted. If inventors were always careful to investigate the conditions necessary to be overcome instead of simply providing a device of their own that might, or might not, overcome those conditions, this state of affairs would not exist. Undoubtedly some one will give the matter sufficient careful thought and attention to solve the problem in the near future.

The requirements of a successful device of this kind as laid down by the Interstate Commerce Commission are as follows:

"1. The apparatus should be so constructed that the removal or failure of any essential part would cause the display of a stop signal, and the application of the train brakes.

"If electric circuits are employed, they should be so designed that the occurrence of a break, cross, or ground, or a failure of the source of energy in any of the circuits, should cause the display of a stop signal, and the application of the train brakes.

"2. The apparatus should be so designed that it may be used on the open railways, on bridges, on elevated structures, in tunnels or subways, and where either steam or electricity is used as a propelling power.

"3. The apparatus should be so constructed as to conform to recognized standards of clearance of rolling equipment and structures, so that those portions of the apparatus placed on the roadway will not be subject to damage by rolling stock or engines, or those portions placed in the vehicle be damaged by structures permitted to exist on the roadway; and, at the same time, all vehicle parts and roadway parts which may have to come into operative relation with each other, should be so designed that proper operative relation will be assured under all conditions of speed, weather, wear of tracks or vehicles, oscillation, and shock.

"4. The system should operate under all weather conditions which permit the operation of trains.

"5. The system should be capable of control by ordinary means used for indicating the condition of the block about to be entered, such as electric track circuit.

"6. The engine apparatus should be so constructed as to prevent the release of the brakes after the application has been made until the train has been brought to a stop, or obstruction or other condition which caused the application has been removed.

"7. The system should be so designed that should operating conditions require it, speed control may be used; that is, provision made for a train to pass an automatic stop in tripping position without the application of the brakes, provided the speed is less than a predetermined number of miles per hour.

"8. The system should be so designed that when no cause for stopping a train exists, a definite and positive or proceed indication will be given at every point where a stop indication would be given or the brakes applied, when adverse or dangerous conditions exist.

"9. The system should provide, at least for use under congested traffic, for the continuous display of indications, rather than for their intermittent display at certain definite points, as of course is necessary with fixed signals.

"10. The apparatus should be so constructed and installed that it will not constitute a source of danger to trainmen or other employees, or passengers."

209. AIR BRAKES: Air Brakes as at present used on railroads are uncertain. Sometimes they hold and sometimes they do not. Sometimes after they are applied they cannot be released without stopping the train and prying them off. This condition of affairs is brought about principally by the failure to act of what is known as a triple valve used in the air brake mechanism. This valve is supposed to operate automatically and both permit the pressure to be applied through the air pipe and also to permit that pressure to be released. A more efficient triple valve has been experimented upon for years by

the railroads and the manufacturers of air brakes, but no practical device has as yet been brought forward.

210. FLEXIBLE HOSE FOR AIR BRAKE SYSTEM: The flexible hose now used between cars for coupling the pipes transmitting air pressure for the brakes frequently "blow out" or break because of the pressure, after they have been used to some extent. Means should be devised to overcome this difficulty without destroying the flexibility of the hose.

211. AUTOMATIC COUPLING FOR AIR HOSE: It is desired to connect and disconnect air hose without the necessity of a trainman running between two cars. In order to accomplish this purpose it is necessary to provide an automatic coupling device that will connect the opposing ends of air hose when the cars are brought together in the same way as the cars themselves are coupled. It should be remembered, however, that the connection must necessarily be air-tight.

212. BRAKE SHOES: The brake shoe at present in use frequently cracks, a part dropping upon the track, which sometimes results in derailing of the train with serious loss of life. A brake shoe which is reinforced and will not crack and which at the same time can be readily removed and replaced with a new perfect shoe would undoubtedly be looked upon favorably. There are patents in this field at the present time, but they have proved totally impractical from the standpoint of manufacture or inadequate from that of utility.

213. AUTOMATIC STOKER: At various times in the last four or five years we have heard a great deal about the prospective adoption of some automatic stoking device to do away with the services of firemen on locomotives. It has invariably been found, however, by practical tests that devices of this kind that have been invented are not practical, principally because of the fact that they do not properly distribute the coal over the surface of the fire in the fire box. Merely getting the coal into the fire box is not sufficient. In order to secure perfect combustion it must be properly distributed over the surface in such a way that the fire will burn evenly. There is a big demand for a proposition of this kind, and a successful invention would undoubtedly be taken up by the railroads immediately.

214. VENTILATING CARS: Most street cars in large cities and the cars of railroad trains are, as a rule, poorly ventilated. The ventilating means is entirely beyond the reach of passengers and is only too often neglected entirely by the crew. It should be possible to overcome these conditions by careful thought, as it is not a subject that apparently would prove difficult to solve.

215. LOCKING AND SEALING CAR DOORS: It is not generally recognized that this is an immense field. Hundreds of thousands of dollars' worth of goods are stolen out of cars every year after they have been put upon sidings or while they are standing still at various points in transit. Many inventions have been patented that are designed to overcome this difficulty, but few of them could be successfully worked under any conditions and none of them are, practically speaking, worth while because of one objection or another. The principal objection is their complication and the fact that they are not automatic in their operation. In addition to that those which are very simple are not effective because they can be easily tampered with by unauthorized persons. The successful lock should be automatic in its operation but, at the same time, readily opened by those having the authority to do so. Means should also be provided whereby

the usual seal can be placed upon the door to prevent its opening under any circumstances except by the proper parties.

216. CAR UNDERFRAMES: The metallic framework upon which the body of a car is placed is known as the underframe. It has been found in practice that in freight cars particularly there is more or less movement under service conditions of the superstructure, this movement being particularly noticeable in the form of a lateral rocking. A car underframe that shall be lightly constructed but possesses as much strength as the present one and that will prevent all movement of the car body placed thereon would be a boon to the railroads and would save big repair bills.

217. STATION INDICATOR: This is needed on railroads and street railways to automatically show the name of the next station at which the train stops or indicate the name of the next street. Those devices which have already been patented are usually impractical because they are easily thrown out of accurate operation. For instance if the train or street car has to move backward a short distance patented indicators would be rendered absolutely inaccurate. In addition to that no means is usually provided to omit those stations at which the train does not stop. In the case of street railways, attention is directed to the fact that when a car reaches the end of its route it sometimes goes around a loop and starts back, whereas at other times the current is simply reversed through the motors and the car returned without turning around. Some inventors have one plan in mind and some the other and, as a result, inventions in this line can usually be applied only under certain particular conditions and are rendered absolutely valueless under others. Sooner or later a successful device will be gotten up and adopted with great gain to the inventor.

218. CAR COUPLERS: A number of large fortunes have been made during the progress of railroading by the invention of new and improved car coupling devices. Those now in use, however, are not successful under all conditions, and trainmen are frequently killed or badly injured by the necessity of going between approaching cars in order to adjust the coupling devices. An absolutely automatic coupler that will compensate for wear and that will take up and permit motion, both lateral and vertical, between the cars it couples, is badly wanted.

219. METALLIC RAIL TIES: This is a field of invention which has been worked to such an extent and with such little success that it has received more or less of a black eye. The fact remains, however, that it will be only a few years before the railroads will have to cease using wooden ties and it naturally follows that they will have to ultimately adopt either a concrete tie or a metallic tie, preferably the latter. Few inventors realize that wooden ties have a more or less shock-absorbing nature, they being slightly resilient. Solid metal or concrete ties do not possess this advantage, and consequently such a tie would be extremely hard on the rolling stock as well as upon the road bed. It is necessary that this slightly resilient feature be retained in any successful invention that may be devised in this field. It should also be remembered that a wooden tie can have the spikes easily withdrawn and the tie slid from under the rails and replaced by a new one. Many metallic ties that have been invented and patented cannot be thus handled. This is an absolutely necessary feature, for unless it is present it would be necessary to take up a long stretch of track in order to replace one tie. The question of weight should also be taken into consideration. A tie should not weigh more than 190 pounds nor less than 130 pounds.

220. RAIL JOINT: The remarks in the foregoing paragraph relative to the large number of unsuccessful patents granted apply equally as well to improved rail joints, this probably being again because of the fact that inventors have not fully investigated the situation before trying to solve the question. It should be constantly borne in mind by those working in this field that any kind of an improved joint that will radically change the structure of the rail has such great difficulties to overcome in the first place that it probably would not prove commercially successful. Steel rails are rolled and consequently cannot be provided with projections, indentations, enlargements and things of that kind without special work that would double or triple the cost of manufacture. The solution of the joint question must be worked out having rails of the present cross section in view. Something must be devised that will take the place of fish plates and that will rigidly hold the abutting ends of rails so as not to permit one to sink below the other and cause that constant hammering noise so noticeable on our railways and so wearing both to the rails and to the rolling stock.

221. FLAT WHEELS: The railroads pay out hundreds of thousands of dollars each year to regrind or replace wheels which have become flattened on one side. Flat wheels are caused by the application of brakes to such an extent that the wheels are prevented from revolving but simply slide along the tracks so as to form a flat place at one point on their periphery. This causes a constant jolting, which is unpleasant to the passengers and exceedingly hard on the rolling stock, and if the flat space becomes too large it may result ultimately in the breaking of the wheels and a consequent wreck. Some means should be devised to prevent the formation of flat wheels, but it would seem that the only way in which this can be done is by preventing the application of brakes to a degree that will "lock" wheels, and of course this is a difficult proposition to do, as under some conditions it is better to lock the wheels and suffer the consequences than permit the train to continue running. Perhaps a new kind of brake operating upon the track instead of upon the wheels would solve the question.

As before mentioned, brakes sometimes become "stuck" and are not released through the faulty operation of the triple valve. This also is conducive to flat wheels. A simple form of indicator that would show the train crew when any particular brake is stuck could be devised very easily and would prevent the conditions referred to.

222. TROLLEY CONTROL: The trolleys on cars frequently jump off the wire and immediately fly up in the air in such a position that they hit all of the cross supporting wires of the trolley line, sometimes breaking them. Means should be devised to prevent this frequent source of damage.

223. REMOVING SNOW FROM RIGHT OF WAY: There are some wonderful snow plows in use on our western railroads today, but even these find it impossible, under some conditions, to make the proper headway and remove the snow so that it will not return to the trackway. Desirable improvements are badly wanted and successful inventions will find a proper reward.

224. STEEL CARS: It seems certain that there will soon be legislation compelling the railroads to use steel cars exclusively. For this reason good improvements in steel car structures that will make them more rigid and will absolutely prevent telescoping or anything of that nature under any circumstances would without a doubt, prove to be a commercially valuable proposition. It is understood that the

Pressed Steel Car Company is always on the lookout for such improvements.

225. PREVENTING REAR-END COLLISIONS: Of course, an automatic train control apparatus, such as that before referred to, is designed to prevent rear end collisions as much as anything else. However, independently of such automatic control it would seem that there is a simpler way in which such collisions can be prevented. Most of them result through the failure of a flagman from a stalled train to go back sufficiently far and notify the approach'ng train that the one in front is standing still. Sometimes, if the flagman goes back far enough, he is not seen because of foggy weather conditions, dark nights or something of that kind and, consequently, his signals are not heeded. Some practical propositon that would absolutely notify, under all conditions, the engineer of an approaching train of conditions in front, and that would warn him in time to permit him to stop his train, would prove to be a valuable idea if properly protected.

226. PREVENTING THE SPREADING OF RAILS: Reference has already been made to improved rail joints and rail ties. Practically the same remarks also apply to devices designed to prevent rails from spreading apart, particularly on sharp curves. Much has been done in this art, but no absolutely successful proposition has been brought to the attention of the railroads.

(b) MOTOR VEHICLES.

Any person, whether owner, operator or an occasional passenger of the motor vehicle, capable of an exercise of inventive faculty, can find ample substance to work upon. From the difficulties present in repair; repeated disalignments of parts; insecurity of curtains, shields and hoods in storms; and, the failure of parts to operate in the case of an emergency, improvement is suggested, and when such is in evidence steps should be taken then and there to invent that which will overcome the faulty structure.

The profits to be gained from improvements in design, mechanism or accessories, patentable in nature, can hardly be estimated. Without doubt there is a market for such. Manufacturers whose efforts are emulative will undoubtedly consider the manufacturing of the improvement, to be embodied in his product, on a royalty basis, that is, a certain amount to be paid to the patentee for each improved device manufactured, and in this connection it is interesting to know that the royalty profits paid for operating under the Seldon patent for three months, by one manufacturer of an automobile, were over forty-three thousand dollars.

227. UNAUTHORIZED OPERATING STOP: Hardly a day passes but what among the news items are the details of stolen cars or motor cycles taken from the curb by unauthorized persons and left abandoned at some outlying district only after there has been some damage, such as a puncture, overheating of the engine or stripped gears. To prevent would-be joy riders, or thieves, from operating the car a positive locking of the transmission, cut-out for the ignition system or setting of the control means against movement may be resorted to. Padlocks on control levers are inefficient, for even the heavier cars may be manually pushed noiselessly to some secluded spot and the padlock broken. What is desired is some simple device preferably capable of locking and unlocking from the operator's seat and not embodying a part, such as a key, which may be lost.

228. AUTOMATIC SPEED CHECK: After a person has gained

confidence in his ability to control a car there is a tendency to speed, regardless of municipal or township regulations. Again, in certain districts the speed regulations are more rigidly enforced than in others. It is therefore desirable to provide some means whereby movement of the car will be retarded upon reaching the limit of speed for which the device is set. Retardation may be accomplished by temporarily shutting off the gas, cutting out the ignition, or retarding the spark. It would be desirable to have the device adjustable and capable of bringing the motive power into operative relation to the wheels after the rate of movement drops to a certain speed.

229. PNEUMATIC TIRE REPAIR: A single combination tool adapted to place the body of a pneumatic tire in condition for repair, whether a puncture,, blow-out or other injury, is desired, in addition to quick-acting cements and universal patches. Temporary means for retaining the air within the tube for even a brief period, so that the car may be moved to a repair station, would meet with much favor by motorists.

230. SHOCK ABSORBERS: The art relating to shock absorbers has been worked to a considerable extent but there is still a chance for improvement. A car on a trip of any length must pass over sections of road which are being worked and are very rough, and is subject to unusual stresses and strains. A successful shock absorber should withstand forces of various degrees, not only to render riding more comfortable to the occupants of the car, but also to prevent disalignment of the transmission. Springs, pneumatic action or the cushioning effect of liquid, such as oil, may be utilized as an absorbing medium.

231. HEATER FOR COOLING SYSTEM: The utility of a device which will heat the cooling fluid when the thermometer drops to freezing point or below will be readily appreciated when attention is called to the difficulty of starting a motor when cold or the damage resulting where the expansion of the frozen cooling fluid is apt to rupture the radiator. A pre-heater should be removable, accessible at all times, remote from the gasoline supply if generating a flame, and without direct engagement of the flame with a fusible part. It may be built into the car or may be an attachment to be connected to the radiator when the machine is in the garage.

232. QUICK-ACTING BRAKES: A brake to bring the vehicle to a sudden stop, without undue wear on the tires and without causing the wheels to skid, is often desirable. Attempts have been made which have been commercially unsuccessful, to apply braking action to all four wheels of an automobile or to interpose an object between the road surface and the wheels. The first mentioned devices have been extremely complicated and not applicable to stock machines, while the second were not so designed as to successfully transfer the shock to those elements of the machine best capable of withstanding the same.

233. RESILIENT TIRES AND WHEELS: Because of the initial expense of pneumatic tires the comparatively short period of time during which they give first-class service, and the great inconvenience resulting from punctures and "blowouts" there has for some time been considerable agitation looking toward the development and adoption of some form of wheel which will permit the use of solid rubber tires, but which will also be provided with means for absorbing shocks as does the pneumatic tire. Many attempts have been made to supply this demand, but none of the large number of patents in the Records appear to be satisfactory, most of them being struc-

turally weak and practically all being unsatisfactory from the shock-absorbing standpoint. Invention in this field cannot be strongly encouraged because of the lack of success of others and the number of patents existing, but the fact remains that this form of wheel will be sooner or later adopted, particularly on low-priced cars, and some one will reap a harvest.

234. SIDE CARS: Cars embodying one additional wheel secured to the side of a motor-cycle are becoming popular. This provides a three-wheeled vehicle. To successfully couple a side car to a motor-cycle it is essential that the plane of the car's wheel be in parallellism to the plane of the drive wheel. To prevent side drag and wear on the tires frequent adjustment is necessary, and no means has been provided which will enable the rider to quickly adjust the car with respect to the motor-cycle for successful running. A car may be detached in from three to five minutes, but it usually takes a half hour to properly align the car with respect to the cycle. The shape and lines of the car body can also be improved, this being the subject-matter for design patents.

235. STANDS FOR MOTOR-CYCLES: Modern roads and other highways are considerably crowned to provide for proper drainage. The placing of a machine on a stand now in common use on such roads often results in the machine falling over and resulting in serious damage to the engine or running gear. An adjustable stand which will enable the machine to be disposed in substantially a vertical plane under any conditions would meet with much favor, as would also means for raising and lowering the stand conveniently from the operator's seat. The stand might also be coupled with a self-starter, so that upon operating a lever the forward movement of the machine resulting from the stand swinging about on its pivot would set the engine into operation.

236. VALVE AND VALVE SEAT GRINDER: Whether manually operated or mechanical, oscillatory as well as ultimate revolutions should be imparted to the valve. During operation, it is desirable to raise the valve from its seat occasionally to permit the grinding compound entering between the working faces.

237. DEMOUNTABLE RIMS AND TIRE TOOLS: A puncture or "blow-out"! The tire must be repaired, or replaced by another, in the shortest possible time. A combination jack which will raise the wheel from contact with the ground and have elements cooperating therewith to facilitate the removal of the demountable rim, or tire itself, if of the clincher type, would serve to good advantage. One of the faults of tire tools now in common use is that it frequently requires more than one person to properly make repairs. As an accessory, nothing meets with more favor by the motorists than that which enables a repair to be accomplished in the shortest possible time.

238. LOCK-CONTROLLED ELECTRIC SWITCH: For the ignition system of a motor vehicle, a switch embodying either a combination or key-operated lock, preventing unauthorized use of the machine, is desired. The cost of manufacture should be reduced to a minimum by having the parts cooperate in such a way that there are as few parts as possible. Possibilities of short-circuiting should be avoided.

239. FUNNEL THAT WILL STOP RUNNING: Curious accidents and the total loss of a motor vehicle occasionally result from the over-filling of the gasoline tank in proximity to a flame or overheated part. This is especially true in connection with vehicles where the storage tank is near the tail lamp, and the gasoline overflows during

the filling process. A funnel which will stop supplying gasoline to the tank after the latter has been filled will meet with much favor by motorists. The stop in the funnel should act quickly and retain the liquid against dripping while the supply in the funnel is being returned to the main storage tank.

240. STARTING DEVICES: This art has been worked to a considerable extent. There is, however, much chance for improvement, especially in reducing the cost of manufacture to a minimum. Mechanism which can be attached to stock cars would appeal to car owners, while devices utilizing some of the essential accessories of an automobile, such as pressure tank for the lighting system, could no doubt be disposed of to good advantage.

241. UTILIZATION OF EXHAUST GASES: The broad principle of using the hot exhaust gases from an internal combustion engine to heat the interior of the automobile has been patented, but practical radiators, foot warmers, hand warmers, means for turning on or cutting off the heat and the general design of this apparatus have not been advanced to the point where the principle can be considered as commercially developed. This is another field which can be worked to very good advantage.

242. VULCANIZER AS AN ACCESSORY: A vulcanizer, which is portable, light in weight and easily operated, should be an accessory to each car. Perhaps the greater proportion of blow-outs result from casing cuts which have gradually gathered dirt and water for a considerable time. When such a cut first develops the vulcanizer should be brought into use immediately. Lightness, durability, and efficiency are the desirable qualities.

243. MOTOR-IMPELLED SLEDS: One drawback of the automobile is that most people believe it cannot be successfully operated in the winter, and in some instances this has been demonstrated to be true. The fact is there has been too little exercise of inventive faculty in an endeavor to provide successful machines adapted for winter use. There is undoubtedly much profit to be derived from the invention of parts which may be substituted for the regular transmission elements, such as the wheels, whereby the body and chassis of an automobile may be utilized to provide a motor propelled sled, or the provision of an entirely new structure suitable for the conditions mentioned.

244. COURSE INDICATOR: Under this heading falls two entirely different types of inventions. The first is some simple apparatus capable of indicating whether the machine to which it is adapted is going to slacken speed, absolutely stop, back or turn to the right or left. This apparatus should indicate the foregoing conditions before they actually take place or start and should furnish the required signals not only to following vehicles but also to those approaching and to traffic policemen where the latter are stationed to signal the operators of vehicles.

The second form is a device for which there is an equally great demand. This should be in the nature of apparatus designed to cover considerable stretches of various highways and to indicate the route to be taken along those highways in order to reach certain desired destinations. In other words, this would be in the nature of a road map carrying complete instructions for driving, indicating all turns, grades, railroad crossings, villages, streets, points of interest, speed limits and so on, but should be in a compact form, occupying little room, or designed to present to the driver's vision only the immediate stretch of road upon which he is traveling at that particular time.

245. GASOLINE INDICATOR: There has recently come into use on the higher-priced automobiles an indicator connected to the gasoline tanks which shows, more or less reliably, the amount of fuel remaining in the tanks. This being a new art, however, there is a great deal of room for improvement and in view of the fact that no field of invention is more profitable than this, the idea referred to can well be given careful consideration. The indicator can be mounted either on the dash or on the tank itself.

(c) NAUTICAL.

Great marine disasters such as the Titanic, the recent sinking of the Empress of Ireland, and similar catastrophes have started many inventors to work along the line of improvements in marine safety devices. There is no better field in which to work if the invention is properly handled and pushed. In addition to safety devices of various kinds there is big room for improvements in other analogous fields, some of which will be referred to below.

246. LOCATING SOUND: This has proved to be one of the most puzzling conditions that have to be met by the mariner. In a vast expanse of ocean on a dark or foggy night, a sudden warning sound may be carried to the officer on the ship's bridge which, if acted upon immediately, might save hundreds of lives. The question immediately arises, however, from whence did the sound come? This is something almost impossible to answer. Some apparatus that will enable the location of such sound is badly wanted and needed.

247. LOCATING ICEBERGS: This has become such an important problem in transatlantic travel that the United States Government now maintains along the lower edge of the ice field a revenue cutter whose sole duty is to warn vessels of the position of dangerous ice. There is no known means by which vessels can locate icebergs for themselves in thick weather except by the sudden lowering of the temperature of the atmosphere in the vicinity of bergs. Some means whereby the ship's officers could immediately locate bergs in the vicinity of the ship, so as to avoid same, would be of immense value and would save the repetition of such disasters as that to the Titanic.

248. PREVENTION OF COLLISIONS: Collisions between vessels are usually directly traceable to one of two different causes, the first, faulty navigation due to bad seamanship or carelessness, and the second being inability to locate one another under foggy conditions. In order to overcome the second cause some signaling means will have to be provided not entirely dependent upon the human ear for interpretation, for it has already been found that whistle and bell signals are by no means reliable under certain conditions. Even if such signals are heard they do not always disclose the location of the other vessel and frequently collisions have taken place even after whistle signals have been exchanged. It might not be impossible to devise some means whereby the location of another vessel will be immediately conveyed to the officer on the bridge of an approaching vessel, not only showing the approach of the vessel but also indicating whether it is directly ahead or to one side.

249. REPAIRING LEAKS: Large vessels are at present being provided with watertight bulkheads so as to prevent water from getting into all parts of the ship if a leak occurs in one compartment. No means are provided, however, to keep the water out of that one compartment. Ships that are too small to be built with watertight bulkheads are practically at the mercy of the sea when they start to leak, and the only way in which a leak can be stopped ordinarily is

to haul out the vessel and repair it from the outside. Means should be provided whereby this could be done at least temporarily, while the vessel is at sea.

250. MEANS OF CLEANING THE HULL WITHOUT DRY-DOCKING: At the present time the only known means by which the hulls of ships can be cleaned of the sea-growth, such as barnacles, moss and the like, is by dry-docking the vessel and cleaning same by hand. This expense of dry-docking is a considerable one, and some means should be devised by which the bottoms of ships could be cleaned without the necessity of hauling them out of the water.

251. AIDS TO NAVIGATION: It is claimed that the rivers and harbors of the United States as well as the sea coast are unequalled with respect to the numberless aids to navigation maintained by the United States Government. Thousands of light-houses, beacons, buoys, and the like are provided. Nevertheless we constantly hear of ships going ashore through failure to see lights or buoys or through a misunderstanding of the channel marks. It would seem necessary therefore to devise more efficient aids to navigation in the way of more powerful lights, buoys that cannot be misplaced by the current or dragged by passing vessels, beacons that will stay lighted for great lengths of time or that will light themselves at the proper time and extinguish themselves in the morning, and other inventions of that kind.

252. LIFE-SAVING APPARATUS: Those inventors who work in the field which we are discussing usually turn their attention, sooner or later, to the provision of more efficient, satisfactory and safe life-saving apparatus and appliances. To these it is pointed out that in most of the great marine disasters of modern times great difficulty has been found in launching life boats. As a rule, when a ship is sinking she lists badly to one side. The life boats on the upper side cannot be launched because there is nothing but the side of the ship below them. The life boats on the lower side have to be dropped straight in the water, which frequently dashes them against the side of the ship and smashes them to splinters. Some means whereby all of the life boats on both sides of a sinking vessel can be manned, crowded with passengers, and safely launched is badly wanted. The same is true of more efficient life preservers. Life boats themselves can be greatly improved upon in many ways. Means should also be provided by which those in the water can be found in the darkness by rescue vessels, even though they may have in the meantime drifted some distance away from the scene of the accident.

253. IMPROVED ANCHOR: It is said that there is no anchor upon the market that will hold an ordinary vessel in times of great stress and storm. In recent years several new forms of anchors have been devised, and one or two of these can be considered well worth while but none of them, under service conditions, are any better or as good as the old type of "mud hook." Not only is an improvement in this field badly wanted by large vessels, but the motor-boat enthusiast would greatly welcome a small but efficient anchor that will hold the boat under all ordinary conditions.

254. MARINE PROPULSION: The screw propeller is as great an advance over the old side wheel as the latter was over the oar-propelled galleys of olden times. Yet it would seem that the present type of propeller has about reached the limits of its development, as no great or radical advances in speed have, of late, been made without great increase in the horse-power of the engine plant or change in type of hull. Perhaps it will be found one of these days that the idea'

means of propelling a ship is a radical departure from the screw propeller. Experiments in that direction should prove interesting and well worth while.

255. COALING SHIPS AT SEA: The navies of the entire world have time after time tried to develop practical means by which their war ships can be coaled at sea from colliers safely, quickly and efficiently. A number of devices of this kind have been developed, but actual and thorough tests under practical conditions have proved that they are of little or no value unless the transfer of coal is made in a sheltered harbor or under unusually fine weather conditions. Most of the coal finds its way into the sea either from being thrown out of the conveyor by the movement of the ships or through the breaking of cables by which the conveyor is carried back and forth. Some tests have shown that large war vessels could use more coal in keeping up their fires than could be transferred to them in the meantime. There is a big fortune awaiting the successful development of a device that will accomplish this purpose satisfactorily.

256. MOTOR BOATING: It was only a few years ago that the motor boat made its appearance in our waters to any considerable extent. In those days any owner of a "naphtha launch" was looked upon as a millionaire by some people and as a fit subject for a lunatic asylum by others. The rapid forward strides of the gasoline engine has, however, during the past ten years transformed motor boating into a popular recreation, and now a first-class motor boat is within the reach of almost everybody.

Although it usually takes a motor boat enthusiast to appreciate the necessity for improvements in this line and work out those hundred and one little things which make motor boating a pleasure, there is much that the uninitiated can also work upon to advantage. This is true of such things as the improved anchor before referred to, a signal, either in the form of a whistle or something of a like nature, that will give a loud sound; cooking utensils adapted for use on board of a small boat, articles of furniture, improvements in berths, and anything that will economize the space on a small boat or increase the comfort of the owner. Attention is also directed in this connection to the rapid development in the last two years of the "outboard" motor such as the "Evinrude," "Caille," "Koban," and similar engines which are easily portable and quickly fastened to the stern of a small boat. Many important patents in this field have been obtained through this office, and it can therefore be stated on the best of authority that great improvements will continue to take place in this line and be readily snatched up by competing companies. More efficient means for starting, stopping, steering, reversing, lubricating and transporting these motors as well as adjusting same to the stern of small boats, increasing their power without increasing vibration or weight, and similar improvements are badly wanted.

257 SEA TELESCOPE: In the August edition of "Popular Mechanics" appears an editorial calling attention to the great need for a telescopic apparatus that can be used to advantage on the sea in a fog. The article refers to the fact that the loss both of the "Titanic" and the "Empress of Ireland" would have been prevented were such a device known and in use. Continuing, the editorial states:

"Probably no other one thing is so urgently needed at sea as some device or process which will enable the lookout to penetrate fog for even the distance of a mile. Such an invention would be second only to Marconi in the heart of the sailor, and would remove from sea travel one of its greatest present risks. Such an invention would be a worthy monument to any man."

TOOLS AND MACHINERY

TO most of us who are interested in inventions and the advance of the various arts, tools of one kind or another and machinery for this, that, and the other purpose, enter into our every-day life. They are necessary in every line of manufacture; they are necessary to every artisan; they are necessary to inventions in other fields and they are necessary to the very existence of commerce and manufacture of almost any kind. It is, therefore, no small wonder that thousands upon thousands of patents relate to improvements in tools and upon machinery for different objects. Furthermore, it is no small wonder that patents in this field that are practical improvements can be so easily promoted and bring their patentees such excellent returns, for, being a necessity, naturally the best possible are desired, and any improvement is eagerly sought for. I can give you only a few hints as to improvements needed and new results which it is desired to attain.

258. REMOVING SLAG FROM COKE FURNACES: When slag is to be removed from coke furnaces, it is now necessary to let the fires die out. This is a great expense and loss of time. There should be some means provided by which this slag could be removed without the necessity of putting out the fire.

259. MANUFACTURING FISH NETS: Although almost any known fabric, including laces of intricate design, can now be manufactured by machinery, fish nets are still made by hand. An efficient machine that will accomplish this satisfactorily should be devised.

260. ENGRAVING METAL: One of the most difficult arts, and one requiring the most painstaking care, is that of the engraver on metal. It would seem possible to do this by means of machinery, but no successful machine has, as yet, been brought forward by the ingenious American inventor.

261. PORTABLE BRAZER: As far as known there is no light, portable brazing apparatus upon the market, and no patents upon such apparatus have come to the writer's attention. This is in spite of the fact that there is a genuine and insistent demand for something good of this nature.

262. SHOE-SHINING MACHINE: There is no better field of invention today than that of an automatic machine for shining shoes which will clean one's footwear and apply the proper polish in the right way and in a short time, upon the deposit of a coin in the slot. Such machines have been placed upon the market, but they are easily rendered inoperative and have proved totally impractical. There is a fortune waiting for the right solution of this problem.

263. LUBRICATION OF JOURNAL BOXES: I have been repeatedly informed by reliable and practical trainmen that it is comparatively seldom their trains take a trip of more than a hundred miles without difficulty arising from overheated bearings, or what are commonly called "hot boxes." This is in spite of the fact that many attempts have been made to devise self-lubricating journal boxes that could be considered strictly reliable, and that the railroads have experimented time after time with these improvements only to find that most of them are of no value whatsoever and all of them entirely unreliable. It should not be thought for an instant, however, that the journal bearings on the trucks of railroad cars is the only field for such a proposition. To the contrary, self-lubricating bearings are highly desirable and badly wanted wherever any bearings whatsoever are used.

Another improvement along the same line to which attention might be called at the present time is the desirability of providing renewable bearing surfaces. This, of course, should be of such a construction that the old bearing surface can be easily removed and a new one quickly inserted.

264. PRINTING IN COLORS: The last few years have seen great forward strides in artistic color printing, but no means has been found by which it can be done in one impression. It is now necessary to make a separate impression for each color, which makes color printing immensely expensive and requires considerable time. The man who finds a way to do color work in a single impression will take his place beside Gutenberg as a genius, and will reap an immensely greater reward in dollars and cents.

245. MACHINES FOR SCALING FISH: Although there have been a number of patents granted upon fish-scaling devices adapted to facilitate this process by hand, there are no practical machines in which a fish can be placed and be automatically scaled. Such a machine would find a wide market among hotels, lunch rooms, cafes and other similar establishments, as well as in fish canneries and similar places where fish are handled in large quantities.

266. BARK-REMOVING MACHINES: As every woodsman knows at the present time bark must necessarily be removed from trees by hand, there being no means to accomplish this result by machinery. A simple, portable machine, therefore, that would quickly and easily strip the bark from the tree would prove a wonderful boon to the trade and to the lucky inventor solving the question.

267. OIL CANS: At first thought it would seem that such a simple thing as an oil can can hardly be improved upon, but such is not the case. On large pieces of machinery, such for instance as locomotives, it is necessary to oil many places where an ordinary can cannot be used because there is no room within which to invert it. To overcome this difficulty there have been a number of oil cans patented and marketed using air pressure to force the oil through the spout, this pressure being generated by means of a small pump attached to the can. It has been found impossible, however, to keep these air-pressure oil cans in order, it being the usual thing to find the pump ineffective under service conditions, thus absolutely destroying the value of the can. Some simple means should be found by which the oil can be forced out without using a complicated, unwieldy and heavy pump, or in which the pump feature can be improved upon.

268. LEATHER-SPLITTING MACHINE: The Association of Leather Manufacturers has offered a prize for the successful production of some more practical and less dangerous means of splitting

leather, which is now usually done by hand. The prize, however, is of little consequence in comparison with the commercial value of such a machine if successfully produced. I am informed also by an officer of the National Association of Tanners that they offer a prize of $100 for safety attachments or accident-prevention devices which are applicable to the present leather-splitting machine.

269. MACHINE FOR PEELING POTATOES: Another machine, improvement upon which is badly wanted by hotels, restaurants, cafes, and other large establishments and also by the United States Navy, is a machine that will automatically peel potatoes. Although it is not difficult to produce a machine that will remove the peel from potatoes, the question becomes a very much harder one to solve when one takes into consideration that the work has to be done without great waste and the potatoes to be peeled are both large and small and of irregular shapes. The proposition, however, is one well worth going after. In a recent communication received from the Chief of the Bureau of Construction and Repair of the Navy Department with reference to potato peeling machines, the statement is made that the Bureau will welcome any improvements in the design of these machines and will give due consideration to such plans, covering improvements in design as may be submitted.

270. DREDGES: The success of our engineers in building the Panama Canal and the Cape Cod Canal is largely due to the immense and highly efficient dredges developed by them. There is, however, much room for improvement, and there is a big demand, all of the time, for increased efficiency in this line.

271. DIGGERS AND EXCAVATORS: Reference has been made elsewhere to the need for various kinds of diggers in agriculture, this being true of potato diggers, beet diggers, and harvesting devices for all similar forms of vegetables. There is also, however, much need for digging machines that will loosen the earth preparatory to removal or that will both loosen it and remove it to a desired spot. Such machines might be somewhat in the same form as our present steam shovels which, although highly satisfactory up to the present time, are constantly being called upon for increased speed and efficiency which they cannot always give. Perhaps an entirely new principle would solve the question satisfactorily.

272. ROAD SCRAPERS: The universal movement for good roads is gradually becoming irresistible and has given rise to the need for all kinds of road building and road repairing machines. Nothing is more badly wanted, however, than small, light, practical machines that can be used by those residing along roads to remove the accumulation of surface dirt, maintain the proper "crown," etc. Such a machine could be very easily developed, and, if properly handled, would prove highly successful from the commercial standpoint.

273. GRINDING AND POLISHING TOOLS: This is already a large and well-worked field, but no machine has ever been invented that can be considered perfect. One suggestion that might be made would be the production of polishing apparatus that will quickly and satisfactorily polish silver, or other metal articles, without marring them and without the necessity of their being manually cleaned as at present. All kinds of grinding apparatus, both for sharpening and also for abrading purposes, can be improved upon to advantage.

274. ROLLING MILLS: The limitations of present rolling mills are numerous and well known to any one experienced in this field. For instance, no practical mill is now in use by means of which a metal pole tapering from one end toward the other can be rolled.

Neither is there any way by which a metal rail can be rolled with indentations, projections, or anything of that nature. This mere fact has prevented many excellent inventions in the way of improved railroad rails doing away with the use of fish plates from becoming commercially successful, they being incapable of manufacture under present conditions. Attention is also directed to the fact that at the present time separate machines are required to straighten metal after it has been rolled. It would seem that this difficulty is one which could be easily solved and overcome.

275. MACHINES FOR NAILING BOXES: This is a proposition which has puzzled some inventors for a considerable length of time. So far, the productions of their brains have been so complicated in operation and have required such fine and nice adjustments of the various parts for each separate box, that they have proved impracticable in comparison with hand labor and therefore have not been adopted. In order to be financially successful such a machine must be capable of handling boxes of all sizes with little adjustment, and must not be complicated.

276. SELF-FEEDING ATTACHMENT FOR JOB PRINTING PRESSES: The pressman operating a job press must insert each separate sheet to be printed with one hand and remove with the other hand, at the same time, the sheet which has just received an impression. This is a tiresome, painstaking and time requiring operation and there is absolutely no reason why some attachment for such presses could not be devised which could be filled with the proper sheets, set in operation, automatically feed the press and remove the printed sheets therefrom. The value of such an attachment would prove incalculable to the small printer.

277. WALL-PAPERING MACHINE: Although the demand has existed for a number of years, no machine for applying wall paper has been placed upon the market, there even being very few patents in this line. Such a machine need not, necessarily, apply the paste to the paper, but if it does so it would be all the more valuable on that account. It is necessary, however, that it be capable of placing the paper in the proper position and registering it both at the top and along the seams. It would, of course, be necessary for the operator to constantly attend the machine, but a successful solution of the proposition would probably result in increased efficiency and speed in papering walls and ceilings.

278. VENDING APPARATUS: Some large fortunes in the United States were made out of vending machines for such things as chewing gum, chocolate and the like. There has recently been a great tendency to sell liquids in the same way, but a successful liquid vending machine that can be placed in public places has yet to be invented. It is reported that one large Northern company has spent as much as $200,000 trying to produce a successful machine of this nature, but as yet has not solved the problem. It is desirable that such a machine be adapted for selling hot coffee, soup and similar liquids on the street. It is absolutely necessary, of course, that they be so constructed as to be durable and not easily gotten out of order. Similar machines for vending almost every other conceivable object are also wanted. Although there are a large number of patents in this field, it is pointed out that practically every object to be sold in this manner needs a specially constructed machine for that particular purpose and consequently the field is almost inexhaustible. I have a special request for a "penny-in-the-slot" machine for selling perfume.

279. CONVEYORS: In these days of increasing mechanical efficiency, conveyors and conveying apparatus are used in almost every factory, mill, grain elevator and other places where it is necessary to continually transport substances, materials, or objects from one place to another. This conveying apparatus as now used, however, is by no means perfect. A large quantity of grain, coal, ashes, ore, slag and the like is continually spilled and, to a great extent, wasted; the conveyor is continually breaking, becoming clogged, requiring additional lubrication or attention in any one of a hundred other ways. Improvements in the mechanism, both for actually conveying materials, and also for operating the conveyor and keeping it in continual and efficient operation, are desirable.

280. HOISTING MACHINERY: This has particular reference to means of hoisting building material to the tops of buildings under construction and to loading and unloading devices in the nature of cranes, derricks and the like. It is desirable that such machinery be constructed with greater strength, but at the same time not require greater power to operate them. Increased efficiency in "picking up" objects and releasing them is also desired. Incidentally there is considerable need for an accurate, quick signaling apparatus which can be used by the man on top of a building to signal the engineer beneath and transmit the proper orders.

281. ICE-CUTTING TOOL: In this art there are two fields to be satisfied. In the first place, small hand devices are desired by the ice companies as well as by the housewife by which ice can be cut without making small but valuable chips fly in all directions. In the second place, cutting machinery that will divide the ice properly into blocks, removing same from streams, or lakes, wherever the ice may be formed, are badly wanted and needed and the successful production of an efficient machine would mean big money to the inventor.

282. MAGAZINE HAMMER: A number of patents have been granted in this field and at least one device of this character has been placed upon the market, but no practical apparatus has as yet been developed. The patented hammers are all unwieldy, inconvenient, badly balanced, easily gotten out of order, and are almost invariably clogged. In addition to that, most of the devices would require tacks to be driven home by a single stroke, a new tack taking the place of the first one as soon as the first is started in by the first blow.

283. MACHINE FOR CASTING IN METAL: It can truthfully be said that the art of casting in metal by machinery is still in its primitive stage. So undeveloped is this art that it is impossible to put one's finger on any particular feature and say that improvements therein are wanted. The fact of the matter is that we have not progressed sufficiently far, as yet, to be able to say that we want improvements of any particular nature. We want, and need, and must have, entirely new basic principles. Here is a field which is almost a virgin one.

284. ANTI-FRICTION BEARING: The modern tendency in machine design has been, and still is, to substitute anti-friction bearings wherever possible. This tendency has been limited to some extent, however, by the fact that such bearings adapted for all purposes are not to be had on the open market. There is a constant demand for improvements in bearings used for all purposes. Means should be provided whereby balls and rollers used in anti-friction bearings can be easily renewed or replaced. The bearings should be formed

so that they can be capable of insertion or removal as desired. They should be constructed so as to take up wear, as far as possible automatically, and also should prevent the sticking of rollers or balls and consequent uneven wearing thereof.

285. MACHINE TO OPEN OYSTERS: Here is a demand which has existed for years, but has been totally unsatisfied. There is no known machine, that can be considered anywhere near practical, which will open oysters automatically. Oysters are, of course, of irregular sizes and more or less irregular shapes. The shells are brittle and easily chipped. The oysters themselves cling to the shells rather tenaciously and cannot be readily removed, except by an expert shucker, without tearing or otherwise injuring them. A successful machine that will accomplish this purpose is, therefore, no easy thing to produce, but there is absolutely no doubt that such would prove to be of great value as it would save much time and an immense expense to oyster packers and shippers. I am in an unusual position to aid a successful inventor in this field to most excellent advantage.

286. MANUFACTURING FRUIT BASKETS AND BOXES OR A SUBSTITUTE THEREFOR: Inasmuch as fruit growers find it necessary to practically give away the baskets and boxes in which they pack their fruit, and, as they use an immense number of such containers each year, the expense to them, which cuts into their profit, can hardly be appreciated except by those in close contact with this industry. At the present time these containers have to be purchased from manufacturers by the packers. There is no reason why a simple machine could not be provided and used by each packer which would construct his own baskets and boxes cheaply and quickly. It is not absolutely necessary that such a machine manufacture the exact form of basket or box now in use. It is quite possible that the simplification of the machine for manufacturing such containers would also result in the simplification of the containers themselves or would cause such containers to be made out of different, but just as satisfactory, material. This is a field in which any person having a knowledge of machine design or mechanics can work to advantage.

287. LATHES: There are many practical changes possible upon lathes and attachments therefor, such, for instance, as centering devices, dogs, chucks, and the like. There is a particular demand for an improvement in the feed mechanism that will permit the speed to be readily and quickly varied without the necessity of employing complicated gear devices and transmission.

288. PAINTING AND WHITEWASHING MACHINE: Remarkable forward strides have been made in this field since I first called attention to its possibilities several years ago. Machines have been produced and operated, with more or less success, that will roughly paint the side of a house or barn or railroad car or anything of that kind, compressed air usually being utilized for depositing the paint on the surface to be covered. No successful machine has as yet been developed, however, that can be easily transported from place to place and used by the average painter to advantage. It would seem that the secret back of the solution of this problem would be the utilization of a brush, or series of brushes, for the direct application of the paint, for any other construction would not permit the application of paint to window frames, door-ways and the like, where a large-sized machine, such as has been produced, would result in the scattering of paint over wall paper, etc.

289. AMUSEMENT APPARATUS: Great fortunes have been made during the past, and will continue to be made in the future, by the invention of novel apparatus in the way of amusement devices. Such things as the scenic railway, the "Old Mill," the "Ferris Wheel," the "Shoot the Chute," and similar devices, have made big money. Successful invention in this field is only a question of producing apparatus that will attract the public and give it a good time. Develop something unusual that might appeal to you, yourself, and you have something worth patenting which, if properly handled, will prove commercially successful.

290. PRINTING WITHOUT TYPE: Occasionally we hear of some one who has produced a process of printing without requiring metal type for that purpose, but it is significant that we never find any such process coming into practical use or even being exhibited for demonstration purposes. The man who is successful in finding the solution will also find himself immensely rich.

291. MACHINES FOR SETTING TYPE: The automatic casting and setting of type by machinery is probably the greatest advance in the art of printing in modern times. Mergenthaler and Lanston, the inventors, respectively, of the "Linotype" and "Monotype" made immense fortunes and their machines are backed by large companies of great financial strength. Like all comparatively new machines, however, both of these typesetters can be improved in detail, and it is needless to add that any improvements will be welcomed by the manufacturers and paid for in accordance with their value.

292. CONCRETE MACHINES: The use of cement and concrete is becoming more and more general, both for building purposes and for making such things as fence posts, telegraph poles, curb stones, sewer pipes, well copings and the like. It has been somewhat hindered, however, by the lack of development of machines and apparatus for handling it. Machines that will construct the above with facility are in considerable demand. That is particularly true of automatic machinery.

293: SEALING CANS: Here, again, there are two fields which you should take into consideration. Perhaps the greatest one, and most important from the financial standpoint just at present, is the provision of successful automatic machinery that will seal tin cans in large quantities at a rapid rate, and efficiently. The machines now in use for this purpose do not do their work with invariable success, and improvements and substitutes are wanted by all of the large can manufacturers and canners.

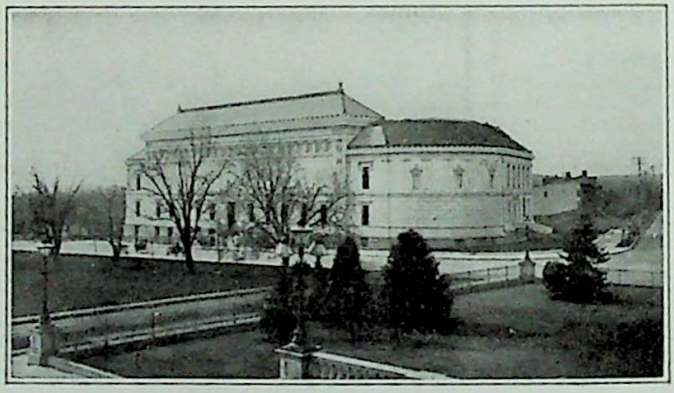
The second field referred to contemplates the production of a household can sealing device that will permit the housewife to put up her preserves and can goods in tin cans instead of glass jars. Heretofore, this has been impossible because of the impracticability of sealing tin cans at home.

294. MANUFACTURING SMALL ARTICLES IN LARGE QUANTITIES: It is superfluous to point out that small objects made of metal and similar materials depend, to a great extent, upon their cheapness of manufacture for commercial success. This is so true that many experienced inventors give more attention to the development of machines to manufacture their small inventions than they do to the latter themselves. This has given rise to a profitable field for others who are inclined toward machine design. As before mentioned there is no such thing as a perfect piece of machinery and there are great quantities of automatic machines now on the market which can be easily improved upon with the result that the

cost of production of the manufactured articles would be greatly decreased.

295. AUTOMATIC MACHINERY FOR PASTRY: There is a big field for the production of automatic machinery for mixing, kneading and baking bread and all kinds of pastry and confectionery.

296 SMALL ICE MAKING AND REFRIGERATING MACHINE: There is now on the market a small plant suitable for large residences, through the operation of which cold storage rooms or large ice boxes can be maintained at a low temperature. This machine seems to be clearly practical as far as its operation is concerned, although it is rather expensive to maintain and, in addition, is very expensive to purchase and install, costing in the neighborhood of $2,000 for the smallest plant. This, however, seems to be a step in the right direction toward the development of a household refrigerating system by which ice can be made in the house and entirely independent of ice companies. There has long been a great demand for something of this kind and the lucky inventor who finds some means by which a device can be placed on the market for three or four hundred dollars, or less, so as to be within the reach of the average householder in our cities, will find himself a mighty rich man.



Corcoran Art Gallery

MISCELLANEOUS

a. EDUCATIONAL
b. MINING AND REFINING
c. MUNICIPAL REQUIREMENTS

THERE are quite a large number of inventions needed which cannot be properly placed under any of the other chapter headings in this booklet and which at the same time are not of sufficient scope to warrant a chapter of their own. These I have endeavored to set forth to a greater or less extent under the above name. As a matter of fact, there are hundreds of thousands of undeveloped ideas which could be included below if space permitted. These inventions are not of less importance than others, but in some instances are as valuable as anything that can be developed.

297. DEVICES FOR AIDING HEARING: While some developments have been made in providing artificial aid for hearing (the auricle, ear trumpet, auriphone, etc.), nevertheless this art is still in a comparatively crude state. Many inadequacies could be rectified were a suitable means devised for either stimulating the vitality of the inner ear, by exercising the tympanic membrane or ear drum, or else in supplanting the natural tympanum by an artificial one which will permit of the proper ventilation of the ear and will not be injurious or unnecessarily cumbersome to the wearer by collapsing in the auditory canal, if made of a flexible material, or of interfering with the vital organs of the head if made of a rigid material.

298. ARTIFICIAL LIMBS: What will be the profit derived by the person who conceives an artificial hand, the fingers of which can be manipulated at will by the wearer? The manufacture of artificial limbs is beginning to increase, but is still in its infancy. Legs jointed at the knees to permit movement independently of the femur, or thigh, constitute a broad field which is substantially undeveloped. Independent movement of the forearm has been found possible at the present day, but only to a very limited degree.

Another phase of this class of articles in which considerable development is sought, is crutches, which may be readily folded when not in use or which can be converted into supporting stools. Pads, etc., on the arm-supporting portions are not only cumbersome, but furthermore do not permit of the proper ventilation, and are frequently instrumental in infecting the armpit. Persons who find it necessary to utilize this means of support, could no doubt make material advances in perfecting some of these defects.

299. SUBSTITUTE FOR RAZORS: Safety razors undoubtedly are one of our material advances of the present century. Although they almost preclude possibility of mutilating the skin while shaving, and facilitate the heretofore laborious task, they do not eliminate this tedious operation. Many compounds have been tried in the furtherance of this last mentioned end, but although chemicals pos-

sessing depilatory qualities have been found, they have been found so injurious to the skin and, very frequently, so expensive, that their use has been almost universally abolished. A medium by which the hair could be removed without injury to the skin, or without material increase over the cost of standard types of razors, would, no doubt, be a commercial success.

300. SELF-CLEANING DRAFTING PEN: The principal difficulty incurred in equipping drafting pens with cleaning elements, resides in the fact that they are detrimental to the draftsman, since they either interfere with the fingers, or else the cleaning element is accidentally released when the fingers contact therewith, since it is almost invariably carried in the handle. A self-cleaning pen which would overcome these difficulties would be most acceptable.

301. SUBSTITUTE FOR COAL CHUTES: The coal chute has been found inefficient, inasmuch as it can be used only for conveying coal from the wagon to the destination when the latter is in comparatively close proximity to the former, and cannot be used at all where the destination is in a plane above the wagon. A means by which coal could be transported from the wagon to a desired point, remote from the wagon, which would eliminate possibility of blockading the street, would undoubtedly be a conceded advance, from which the inventor would admirably profit.

302. MACHINE FOR PLUCKING FEATHERS: Thus far no machines have been invented which would supplant the manual plucking of feathers from fowl. This is a class which is almost totally undeveloped, which only goes to show what a dearth of inventive faculty there has been along this line. A machine is desired which will positively remove the feathers from all parts of the body of the fowl, leaving the legs and wings intact.

303. BORING WELLS: It is apparent that considerable unnecessary time is consumed in the boring of artesian and oil wells, and the cumbersome mechanism used in this capacity has long been found inadequate, but has necessarily been retained in use for want of something better. Much difficulty is, likewise, experienced in removing the materials which have been loosened during the boring operation, and a machine which would, in conjunction with boring the earth, remove the loosened materials, would tend toward perfecting some of the obvious defects for reducing time and labor.

304. GRAIN DRIERS: Although the perforated revolvable drums in which the grain is carried or through which it is passed, in some instances, have been found efficient, there is still demand for a more effective, and if possible, a less expensive medium.

A means which would obviate the handling of the grain in order to dry the same would unequivocally surpass any improvement which could be made on our present type of driers. For instance, a mechanism by which grain could be dried while stored in bulk, would eliminate not only the cumbersome structures used today, but would, furthermore, diminish handling of the grain, in conjunction with its complemental multiplication of labor.

305. SLAUGHTERING AND BUTCHERING APPARATUS: Although little difficulty is experienced in slaughtering animals at the present time, nevertheless the method of procedure usually gone through in removing the hide, relieving the hide of its hair, the dismembering of the animal, etc., could be curtailed to a considerable extent by the production of more apt means. Improvements in intestine cleaners which would not mutilate the intestines during the

cleaning thereof, and at the same time would positively cleanse them, would be instrumental in facilitating sausage making.

306. ADVERTISING, SIGNS, ETC.: Large sums of money are yearly offered by manufacturers for novelties in signs which possess qualities of rigidity and durability, which can be manufactured at a reasonably low cost and which will conspicuously display their trade names.

Aerostatic, illuminated, and interchangeable exhibitors are very often desirable, but their use has been confined almost exclusively to cities, since an illuminating agent, such as electricity or gas, is necessary for properly displaying them. Signs, therefore, of this nature which would be equally applicable to rural districts, are desired

(a) EDUCATIONAL.

Our best, biggest and most public spirited citizens constantly have before them the interests of education, and many have devised ways and means for advancing education, particularly of children, with great success. Big improvements in this field are constantly being made, and some of our best known men today are inclined to turn their energies and activities in this direction.

Well-known educators are now agreed that schools should be made as interesting as may be and that pupils should be taught as much as possible by actual demonstration and example rather than by constant, repeated and uninteresting study of theories. Thomas A. Edison has ideas on this subject as well as most others, and in a recent interview stated that the present system of education is a remnant of the old Latin institutions and was too involved. "What we should have," he said, "is education by demonstration."

307. WRITING SURFACE FOR CHALK AND THE LIKE: It has long been a well-known fact among educators as well as oculists that the universal use of "black boards" in schools is extremely bad on the eyes for the very simple reason that a white mark on a black surface seriously affects the eyesight. It would seem that this could be easily overcome by the provision of a white surface upon which could be used charcoal or a black chalk. An attempt has been made, as a result, to devise a suitable material for use as a "white board" or other writing surface. So far, these attempts have not resulted successfully and the ideal writing surface is still to be produced.

308. SCHOOL FURNITURE: There is much room for improvement in the way of furniture for use in school rooms. That is not only true with respect to adjustable desks and adjustable seats, but also with regard to provision for storing books, pencils, pens, holding ink wells and similar objects and other kinds of furniture for use in the education of the young. Here would seem to be an excellent field for invention and one promising first-class returns.

(b) MINING AND REFINING.

During the past it has been proved that few fields of invention are more lucrative to the inventor who knows what he is doing than the art of mining and refining precious metals and other ores. There have recently been great advances in this line of endeavor and progress has been facilitated to a considerable extent by the organization in several of our states, as well as by the United States Government, of Bureaus of Mines, or commissions, whose duty it is to

protect the mine worker as well as to otherwise advance this very important art. Moreover, large mining companies are themselves taking an active hand in the production and installation of safety apparatus, improved machinery and more efficient processes, and the inventor working in this field can look to all of these sources for material encouragement and aid.

309. MACHINERY FOR COAL MINING: Drilling machines operated by electricity, compressed air, or hydraulic power have been proved more or less practical under certain conditions, but cannot be used under all circumstances. Their efficiency is frequently impaired through one fault or another, and there is much room for improvement. One of the biggest things that could be invented in this general field at the present time is an improved machine for cutting out coal. This need not be in the form of the present drill and need not at all be within the conception of any prior inventor or within the scope of anything patented or in use at the present time. Simply invent a machine that will get coal out quicker and better than the present apparatus and you will have something which will earn a fortune for you.

There is also need of substituting a stronger and more permanent framing than can be formed out of wood. It would seem practicable to construct apparatus out of metal or reinforced concrete that would serve this purpose and would greatly increase the safety of the workers.

310. SLATE-PICKING MACHINE: The nation-wide movement against child labor has not by any means ended the employment of children to pick slate from coal. No practical machine that will accomplish this purpose exists. The employment of adults would prove such an expensive proposition that coal mining companies continue to employ child labor. It would seem that the only way in which this can be prevented and overcome is by the invention of an automatic slate picker. This should not prove impossible, although many ingenious brains have worked in this field during the past without success.

311. "SAFETY FIRST": The "safety first" propaganda which has gained such great headway throughout the world has been concentrated to a large extent upon the development of safety devices for use in mines. That is true not only of improved machinery and processes, methods of mining, timbering, ventilating, and the like, but also is particularly noticeable with respect to the production of life-saving appliances and resuscitating inventions. Such things as safety catches or stops for mine elevators, safety cars and car wheels for mine use, improved ventilating apparatus, signaling means by the use of which miners in remote passages can be quickly warned of danger in time to permit their escape, fire-fighting apparatus, and things of a like nature in use in mines are badly wanted and would bring excellent prices when proved practical.

312. PRACTICAL PROCESS OF EXTRACTING GOLD AND SILVER WHERE IT EXISTS IN SMALL QUANTITIES: There are in the United States thousands of claims bearing gold and silver in such small quantities that under present processes it would not pay to work them. In addition to that there are thousands of "dumps" containing discarded ore of low grade that cannot be worked under existing conditions. Time after time, advance steps have been taken in the working of these two metals and in the concentration thereof that have warranted, step by step, the commercial working of lower grades of ore which, previous thereto, could not be handled to advan-

tage. It seems to be practically a certainty that sooner or later some one will hit upon a process that will enable one to work the very lowest grades and make big money out of them.

Attention is directed to the fact that in ordinary clay considerable gold exists. It seems that that fact is not generally known. The only difficulty that has been found is in concentrating that gold or extracting it from the clay. Although it can be done, and has been done, no one has found a practical, commercial way of doing it. Maybe you will be the lucky one in solving this problem.

(c) MUNICIPAL REQUIREMENTS.

Unlike improvements in many other arts, whose object is to perfect defects and eliminate inadequacies, which would only be used by a certain class of persons, the present requirements are those sought for in the furtherance of the public welfare and safety, and would be of universal benefit. Each individual is able to readily perceive the acceptability, as well as the imperative need, for some of these improvements. A few suggestions are set forth below, which will tend to illustrate what an apparent lack of improvements have been made along this line.

313. MEANS FOR MELTING SNOW: This class has been practically at a standstill for the past few years, and, as yet, no means has been devised which would satisfy the requirements.

If it were possible to melt the snow along thoroughfares, especially pavements, by a process, a machine, or otherwise, it would no doubt be acceptable not only to individuals, but to the public in general, and would, no doubt, be adopted by the government in the furtherance of citizens' safety, thereby avoiding numerous accidents which yearly occur from icy pavements.

314. STREET SWEEPERS: What is mostly desired toward the perfection of street sweepers is to not only cleanse a portion of the street of extraneous materials and cause them to be lodged adjacent the margins of the streets (as is the case in standard types of street sweepers now in use), but it is further desired that these materials also be carried away by the sweeper, eliminating the necessity of gathering them after they have been swept from the center of the roadway to its margins. A sweeper which would not be cumbersome, and which would effectively clean the streets, would be a readily saleable article.

315. PAVING STRIPS ALONG CAR TRACKS: Asphalt and similar material have been thus far found to produce the best streets. A considerable disadvantage in streets of this nature, however, has been found along the tracks of street railways, since the weight of the rolling stock passing over the rails tends to crack the street adjacent thereto. Consequently bricks are now used between the streets and the tracks, to avoid the cracking of the former. Were this objection overcome, substantially one-fourth of the labor now used in making streets would be eliminated together with the expense complemental to the labor, which is a very material consideration.

316. STREET PAVERS: The procedure which is gone through in paving streets, especially asphalt, granolithic, concrete, etc., could be greatly reduced by more apt machinery which would reduce the manual labor which is now found necessary, especially in the initial operations. A machine which could be used for laying the street, which would perform the various steps in the operation, including the tamping and rolling of the same, would materially decrease the time

and labor expended at the present time in paving. A machine which would even combine a couple of the steps of the operation, such as mixing the concrete, dispensing it in proper quantities, and then rolling it, would be a material advance.

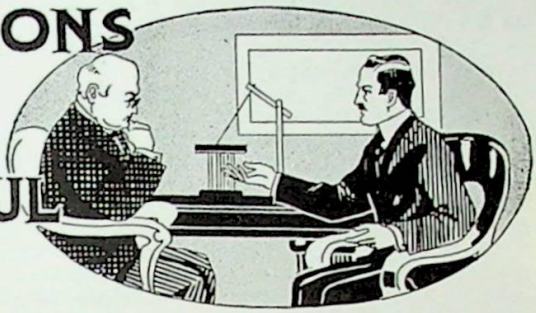
317. DISPOSAL OF GARBAGE AND SEWAGE: The disposal of garbage has been somewhat facilitated by the use of the incinerating furnace, but the use of this requires the garbage to be conveyed to a place remote from the residential district of a city, in order that the odors, which are the natural consequences of such a consumption, will not prove obnoxious to the public. If the necessity of gathering, conveying and consuming the garbage could be accomplished by a less expensive process, reimbursement would be nearly inevitable for the conceiver.

Practically no forward strides have been recently taken in an endeavor to either perfect our present sewage system or to substitute a new one therefor. Municipal authorities are eager to grasp any type of invention along this line consistent with the rapid advance toward the betterment of sanitary conditions.

318. PAVING BLOCK REMOVERS: Very frequently it is found necessary to remove the paving blocks or bricks for various reasons, and to do this it is frequently necessary to break the blocks or bricks adjacent to the ones which are to be first removed. Needless to say this is an unavoidable loss of material which could be remedied by making the removal of the first block possible, without sufficient interference with the adjacent blocks to render them inapt for further use.

319. TRASH AND GARBAGE WAGON: The trash and garbage wagons now in use, although usually made of metal and provided with covers, etc., are obviously inadequate to be classed with the high standard of sanitation which now prevails along other lines. Not only do these wagons emit disagreeable odors which arise from the contents carried thereby, but, furthermore, the passage of these wagons throughout the residential, as well as the business districts is detrimental to the public welfare, since it is only reasonable to assume that disease would be nurtured, rather than dissipated, in these wagons in which putrified or decomposed foods are carried. The demand for improvements in this line will, in a very short space of time, be mandatory and some means will necessarily have to be substituted for the present system of conveying waste materials of this type.

INVENTIONS OF DOUBTFUL VALUE



THERE are certain fields of invention which, for one reason or another, have been more or less overworked, and in which an inventor does not now stand the same chance of achieving commercial success as he does in others. Many of these fields are very attractive to the inexperienced. The ideas seem capable of easy solution, and this, coupled with the unusually large returns which successfully handled patents on these ideas would undoubtedly produce, has induced hundreds to "try their luck" with—up to the present time—indifferent, or even poor, success.

Most, if not all, of these ideas are discussed below. It must be admitted that an insistent demand exists for many propositions here referred to, and that properly constructed, well protected and practical devices that would fill the demand would prove immensely remunerative. The fact still remains, however, that an unusually large number of patents have been granted in each of these fields, and that, comparatively speaking, but few of the patentees have achieved that success which they had been led to anticipate. Unless you develop something unusually good, therefore, it would seem to be wise to direct your efforts into other and more promising channels.

I shall be pleased to advise you more specifically concerning any of your efforts in these fields at any time.

(1) NON-REFILLABLE BOTTLES: There have been a great number of patents granted upon non-refillable bottles, very few of which have proved commercially successful. It must be admitted, however, that there is a big demand for something of this kind, this being evidenced by letters in my possession from manufacturers desiring something in this general field that will fulfill their purposes. In a recent letter of this type among other things a large distiller says: "As you may refer some more of your clients to us, we wish to say that while we are thinking somewhat of adopting a device of this kind, same must comply with the following specifications:

(1) It must be constructed of some material which is not affected by whisky in any way. This precludes the use of any metal whatever on the inside of the bottle.

(2) The cost must not be more than four (4) cents per bottle.

(3) The device must be constructed so that it will be absolutely tight when whiskey is shipped, so that there can be no leakage.

(4) The device must be so constructed that it is easily attached at the time the bottles are filled. This precludes the use of such methods of fastening as cementing, welding, etc.

(5) The appearance of the bottle must be practically the same as that of an ordinary bottle.

(6) The device must be adaptable to a long-neck bottle, such as is commonly known as "brandy shape."

(7) The bottle must be of such construction that it can be made on the Owens Automatic Machine.

(8) The device must be such that a bottle can be emptied with ease, and when held at any angle, and without any gurgling and spouting.

(9) It is needless to say that the device must really make the bottle non-refillable.

In spite of this demand it seems to be very difficult to devise an invention that will prove satisfactory in every way. It is a bigger question than most people think. The idea sounds very easy to solve, but when you get right down to work on it it proves to be a very difficult proposition. The subject is such a large one that I have seen fit to publish a separate booklet covering it in greater detail than it can be covered in the short space here afforded. This booklet contains illustrations and descriptions of one hundred bottles designed to prevent refilling that have been patented during the past, these being selected from a large number of others in the Patent Office Records as being typical of various types that have been developed up to the present time. A perusal of this booklet will give a very definite idea of what has been invented and of the obstacles which have, and have not, been overcome. It discusses in considerable detail the requirements of such an invention in order that it may be successful, the demand for such an idea, the advisability of securing a patent upon non-refillable bottles, and similar things which will be of the greatest interest and value to you. A copy of this booklet will be forwarded upon receipt of $1. It is the only booklet published that will give you a fair and unbiased idea of this great field of invention, and it is the only way in which you can obtain the information which it contains unless you go to considerable expense for copies of patents and other information which you might not be able to obtain at all. Any one interested in this field is advised to obtain a copy of this booklet before he spends money for a patent.

(2) RAIL SPIKES: Railroads throughout the country have considerable trouble keeping their rails properly spiked to wooden ties. The constant vibration of heavy trains passing over the rails gradually works the spikes loose and this frequently results in spreading of the rails, consequent derailment of the train, and considerable loss of life and property. Inventors have tried to solve this question and overcome the difficulties mentioned by providing spikes that will not work loose and cannot be readily withdrawn from the tie into which they are driven. There have been a large number of patents granted in this field, but as far as I know, none of them has ever resulted in financial reward to the inventor. Undoubtedly it is possible that a successful invention of this kind would mean a great amount of money to him lucky enough to solve the question, but patents have already been granted upon so many different constructions that have not proved successful, either from a practical standpoint or from a commercial point of view that it is thought that you could spend your energy to better advantage working in ot er fields.

(3) THE NUT LOCK: There have been as many patents granted upon nut locks as there have been upon non-refillable bottles, this being another favorite field of invention. There is considerable encouragement, however, on this nut-lock proposition for the very simple

reason that quite a number of inventors have developed commercially successful inventions in this line during the past. There are now upon the market a number of different nut locks which are proving highly successful and more or less practical. Up to the present time no railroad has generally adopted any such idea submitted to it. All roads, however, seem to be only too glad to consider new devices in this field and, moreover, seem to be anxious to adopt something of this kind provided a successful and practical one from every standpoint should be submitted for their consideration. The fact that they have not adopted any of the present existing devices but continue to go to a greater amount of expense for experimental purposes, and an immense outlay in the way of trackwalkers, whose duty it is to see that all nuts in rail joints are maintained in a tight position, surely indicates that nothing of this kind has as yet been submitted that can be considered satisfactory. There is absolutely no doubt but what some one some day will make a great amount of money from a successful nut lock.

I am glad to receive the disclosures of nut locks at any time and make searches of the records, reporting to clients as to their patentability, etc., but in view of the uncertainty existing because of the foregoing facts, I can never advise any client to obtain a patent upon a nut lock unless his invention should prove to be unusual in every respect.

(4) MEANS FOR RELEASING RUN-AWAY HORSES: This, also, has long been a favorite field of invention for many, and attorneys have succeeded in getting a great deal of money out of their clients on this proposition. Many devices, apparently practical in every way, have been patented but none have been adopted as far as I know. I cannot advise any one to spend time, trouble or expense on a question the solution of which has already been worked out several times in a practical way.

(5) SAFETY ENVELOPES: Some years ago I received a request from one of the largest manufacturers of envelopes in the United States asking for a patent upon a simple envelope of the safety type which would prevent opening without detection, or without the total destruction of the envelope itself. I called a number of practical patented devices in this line to the manufacturer's attention, but none of them proved satisfactory—the principal objection being the cost of manufacture. In my judgment those devices were about as simple as any safety envelopes can be made. It would seem that in this field something is wanted that is practically impossible of production. None of the large manufacturers will have anything to do with a safety envelope that costs hardly any more to manufacture than the present envelopes.

(6) TABLE FOR VESSELS: It has been said during the past, and is still maintained by many attorneys, that no table for vessels has ever been invented that will prevent dishes and everything placed thereon from sliding off while the vessel is in rough water. Such, however, is not the case. There is practically only one way to construct a table that will maintain its balance and will remain level, and that is by mounting the same on pivots. This is an old expedient patented many years ago. It has not come into general use for some unknown reason, but the fact remains that it is an old idea. Any further attempt in this field would, in my judgment, prove valueless.

(7) FRUIT PICKER FOR LARGE FRUITS: It has been pointed out elsewhere in this booklet that there is a great demand for a

fruit-picking device for small fruits such as cherries, cranberries, etc. It is wise to here differentiate between fruit pickers for small fruits and for large fruits. There have been all kinds of devices patented in the past for picking peaches, apples, oranges and other similar fruits, and practically all of these have been worth while from the standpoint of utility. The market is flooded with such ideas, however, and the supply of patented inventions is much greater than the demand on the part of manufacturers for new inventions of this nature. If, therefore, you desire to work upon a fruit picker of any type devote your energy to one which will successfully pick small fruits, with the assurance that if you can develop a practical invention of this nature there is every prospect of your being able to handle it successfully from the commercial standpoint.

(8) STAMPING DEALERS' NAMES ON EGGS: There is said to be a demand for some kind of a stamping device for placing the names of dealers, commission merchants, etc., on all eggs handled by them. If any such demand exists it has not come to my attention in a tangible form. I have never been able to see the advantage of any such invention and I do not believe that even a successful device of this kind would find a practical use. In the absence of definite information, either one way or the other, I would advise that you carefully investigate this subject before patenting any invention in this line that you might develop.

(9) MEDICAL COMPOUNDS: Generally speaking, the United States Patent Office will not grant a patent upon a medicinal preparation, or what is sometimes called a medical compound. This is because of the fact that most such compounds are nothing more nor less than the result of a physician's prescription. In other words, any skilled physician could write a prescription for such a compound, and the result is that their preparation does not amount to invention and therefore they are not patentable. This is the stand usually maintained by the Patent Office. As a result of this attitude it is most difficult to obtain protection by means of a patent upon a medical preparation of any kind. If it is something unusual it can usually be protected, but if it is merely an ordinary preparation such as is within the skill of any physician then it cannot be protected. Inasmuch as they are also difficult of promotion, I would advise that you be careful before securing a patent upon such a proposition. I can advise more definitely in specific cases after having complete information at hand.

What Manufacturers Want

Most lists of inventions wanted are totally misleading and highly inaccurate, because they have been prepared solely with a view to trapping inexperienced inventors into working on ideas which can be easily solved—thus causing many fees to flow into the coffers of the "attorneys" publishing the lists. The list hereinbefore given will be found reliable because it was compiled with a view to the demand for such ideas, this demand being determined very largely by the inquiries constantly coming in from manufacturers and buyers of patents, who, being aware of the fact that I secure patents that protect the invention, was the first attorney to organize a sales system of real value and proven advantage, and have carried that department to a higher state of development than any other attorney, inquire of me for inventions in their line of manufacture. Some few of these letters will be found set forth at length in my guide book

"Successful Patents," but in order to keep them more up to date than is possible when they are published in a booklet of considerable size and in view of the fact that they are constantly coming to hand, they are published, from time to time, in circular form entitled "Wanted—Ideas," and also in the booklet.

Is Your Invention Wanted?

I stand ready at any time to advise you, without charge, as to whether or not a demand worth considering, exists for an invention such as yours. The fact that I am in constant and close touch with manufacturers and their wants, as evidenced by the letters above referred to, the fact that they communicate with me in such large numbers when in the market for new inventions (thus paying tribute to the protective value of Owen Patents as well as the conveniences and well-known efficiency of my sales department) and the fact that I originated the methods of patent promotion employed for the benefit of my clients and, therefore, have naturally had a larger and broader experience in this field than have any of those who are now copying, and widely advertising, my methods—all these things permit me to accurately advise and counsel you.

Do not hesitate to write for advice, but remember that I cannot go into details in discussing an invention unless I am first furnished with sufficient information to enable me to form an intelligent opinion.

Security

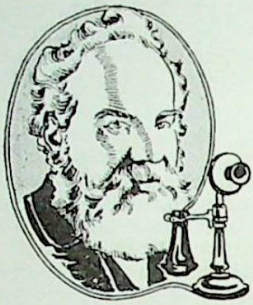
It is truthfully said that I have done, and am doing, more to absolutely protect my clients' inventions, both before and after the filing of applications, than is any other attorney.

The fact has become axiomatic that an inventor is totally in the hands of his attorney from the time the invention is disclosed until the patent is issued. Some attorneys have learned to overcome this to some extent by issuing a contract if the invention is reported patentable. Unfortunately many of these "contracts" or "certificates," "bonds," etc., are absolutely worthless, being full of trick phrases and pitfalls into which the unsuspecting or ignorant inventor allows himself to be led. This kind of a contract is worse than none at all. The contract I issue is a plain, straightforward, legal document which anyone can understand, and which will absolutely protect you from the time the application is filed to the time the patent is allowed. A copy was sent you in my first letter.

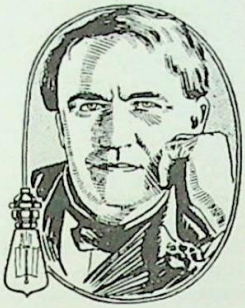
This is where other attorneys stop. I go one step further and protect you from the time you disclose your invention to me to the time the application is filed. I make a contract with you under seal, in view of which you could not possibly lose a cent. Such a contract was also enclosed in my first letter to you. As many duplicates as may be desired will be sent upon request.

These two contracts close up every loophole, and totally remove every danger of which you can conceive. I originated this plan of doing business, and up until the present time I am the only attorney who follows it out, and who protects you from the time you disclose your invention to the time your patent is allowed. In addition to this, it is pointed out that my patents absolutely protect. They have no loopholes of which infringers can take advantage. They are strong in every detail. They are positively impregnable, and my past clients stand back of me in making this statement.

An OWEN PATENT is essential to your success.



SUCCESS POSSIBLE FOR ALL



THE chance for success in the field of invention has ever been unlimited, and today it is more expansive, more unbounded than ever before, because of the unprecedented commercial progress which we are now enjoying. This statement is proved by the annually increasing number of patents issued and the correspondingly great increase in the financial successes recorded as resulting from good inventions properly protected through a reliable attorney.

There never has been, and never will be, as good an investment as a patent—provided it legally protects the invention, or, in other words, was secured through a reputable patent lawyer. Patents make the poor rich and the rich wealthier. Their advantages are open to all—men, women, and children of all races and nationalities. No specialized education is necessary to success, nor is knowledge of any particular field of science or invention essential. It is a fact that many of our greatest inventors have been poor men or women, with, in many cases, no education and no preparation for the line of endeavor which brought them fame and fortune.

For instance, everyone knows that the Wright Brothers were struggling bicycle repair men in Dayton, Ohio, until a very few years ago, when they hit upon the principle of their flying machine, which has already brought them wealth and a manufacturing company backed by millions.

A Belgian by the name of Gramme, who invented the ring dynamo, could hardly read or write. Although he was a carpenter, he bought a book on electricity and tried his best to teach himself something about the (to him) strange science. How well he succeeded will be realized when it is pointed out that his invention brought him a fortune, made him famous, and revolutionized the industry.

Edison was a telegrapher when he made his first invention, an improvement in the then existing telegraphic apparatus, for which he received $36,000.

In 1855 Henry Bessemer perfected his process for steel making after years of struggle and defeat. When but a mere boy his first work was in die making. He discovered that the English Government was losing large sums through the fraudulent use of stamps, and young Bessemer set to work to do away with this. He was poor, but endowed with indomitable will. Finally success crowned his efforts, but, like many another inventor, he did not take the precaution to protect his invention by a patent and the idea was deliberately confiscated.

With no money, the chance of winning his sweetheart deferred by this financial knock-down blow, he regarded the situation with philosophy and turned his attention to the field of alloying. Here he commenced by busying himself with roller engraving. Experiments resulted in the production of steels of excellent quality containing any desired fraction of carbon at a cost of six or seven pounds sterling per ton, against fifty or sixty by the methods Bessemer laid on the shelf. He did away with the smelting of pig iron, the rolling, shearing, and piling of bars, and the heating furnace.

From the beginning of the Bessemer manufacture to the present time the main output has been steel rails for railroads. A railroad laid at Crewe Station in 1863, with rails weighing 20 pounds to the yard, was turned in 1866 and taken up in 1875. It was estimated that seventy-two million tons had passed over it, while the greatest wear of its tables was but .85 inch. His predecessors had made forty to fifty pounds of steel in small crucibles. He made five tons in twenty minutes. Knighted by his Government, leaving a fortune of more than a million pounds, commemorated wherever a locomotive rushes over the rails, this famous inventor is quoted as declaring that the early days of struggle and privation were happier than the latter ones of achievement and recognition.

Arbuckle, the coffee man, was a little corner grocer until he invented a machine to pack coffee. Now the Arbuckles are millionaires.

M. W. Baldwin was originally a designer of jewelry. He invented improvements in steam engines, secured patents and established the great Baldwin Locomotive Works, based thereon.

C. L. Sholes and W. M. Jenne are the fathers of the modern typewriter. Both were "men in overalls," but both died rich.

The "crimp" cap, now universally used on bottles containing liquids, was the invention of a poor man, William Painter, of Baltimore, who has made a fortune from his simple little idea.

A yearly income of $25,000 in royalties is enough to make any man think twice before consigning a new idea to the scrap heap. That is the sum which Hugo Cook receives from his cash register patents. He was once a poor man.

Merganthaler, inventor of the Linotype Machine, once a mechanic, died a millionaire; and the same applies to L. C. Crowell, inventor of printing machines, and Frank A. Johnson, patentee of a type-setting machine.

Robert Fulton, born at Little Britain, Pennsylvania, had little regular schooling, but was very studious. At seventeen he was apprenticed to a jeweler in Philadelphia. He also took up miniature and landscape painting and in a few years earned sufficient money to buy a farm for the support of his mother. He then went to England to study under West, the celebrated artist. His attention was, however, soon turned to mechanical inventions and he took out patents for several useful appliances. In Paris in 1803 he constructed a small steamboat that navigated the Seine. He returned to America and in 1807 launched the Clermont, beginning successful steamboat navigation.

Reapers and mowers received the attention of a poor inventor by the name of Hussey. He made a fortune.

A little Washington, D. C. jeweler by the name of Flanegin invented a method of cleaning the paraffin from oil wells by dropping down them an electric stove, and his idea made him immensely wealthy.

Alexander Bell, of telephone fame, was a school teacher, but is now worth several millions.

Emile Berliner, who adapted the Bell telephone for use over long distances, is several times a millionaire although he was once a clerk.

George P. Burton, Alexander P. Morrow, George Westinghouse, Charles J. Van Depoele, and many other rich men were once poor and struggling, and owe their meteoric rise to the mere fact that they used their brains and protected their ideas by good patents.

Nothing is too simple to patent. The "crinkly" hair pin, the "see-that-hump" hook and eye, the wooden shoe peg, the metal heel plate, the copper toe for children's shoes, simple toys, games, puzzles, etc., and an infinite number of other simple ideas have proved veritable mines of gold for their lucky inventors. What could be simpler than tapering the end of a candle to make it sit more firmly in the holder? Yet the idea made many thousands of dollars. Many such inventions are constantly being thrown away because their originators think them unworthy of a patent.

Fees

I have always aimed to make my fees just as low as is consistent with the character of services which I render. Some attorneys quote their fees as being lower than mine, but it should be remembered that I contemplate rendering the best possible services and that my fees include everything. You will not be called upon, for instance, to pay extra for the prosecution of your case after paying the specified fee for preparing it. You will not have to pay extra for each amendment filed, or each argument presented, or each interview I have with the Examiner in charge of your case, or each extra view used in illustrating your application. Remember this when comparing my fees with others. Mine will be found lowest in the long run. The minimum charges are here quoted. For further information about fees see my guide book "Successful Patents," or consult me about your particular case.

U. S. Mechanical Patent (including all government fees, etc.)	$65
U. S. Compound or Composition Patent (including government fees)	65
U. S. Process Patent (including government fees)	65
U. S. Design Patent (including government fees):	
Three and a half year term	30
Seven year term	35
Fourteen year term	50
Registration of Trade Mark	30
Registration of Print or Label	20
Copyright	10
Assignment of Patent	5

The First Step

The first thing you want to know is whether your idea is valuable or worthless—whether it is worth spending money on or not. The second thing—if the first is answered in the affirmative—is whether you can protect it or not, and if so, how strong a patent you can get.

Prepare and send to me a full disclosure of your idea. If you have a model send that express prepaid. A model, however, is entirely unnecessary. You can simply send drawings or rough sketches if more convenient. If drawings or sketches are sent be sure that they show every detail of the idea, the invention being preferably illustrated from several different points of view. Number every part shown, giving the same number to the same part throughout the several views. Accompany this with a full and complete description of the construction and mode of operation, referring to the different parts by their numbers. Such a disclosure will enable me to fully understand just exactly what you have in mind.

THE SPECIAL EXAMINATION.

Send a disclosure, such as the above, to me, together with $5, and I will make a Special Examination of the Patent Office Records (see page 24 of my book "Successful Patents"), and report fully to you as to the patentability, practicability, etc., of your invention. The $5 is in the nature of a deposit and is deducted from the balance of the fees when you proceed with an application, so that in such case the examination and report really cost you absolutely nothing. If, for any reason, you do not proceed, I, of course, retain the $5 for my services. It is always advisable for you to have me make a special examination. I recommend it because it insures safety.

MY FREE OPINION.

It is not absolutely necessary to send any money when forwarding your disclosure. Upon receipt of the latter alone I would be very glad to write you a full and complete report concerning the probable patentability, practicability, value, etc., of your invention, and you need not feel under any obligation whatever. This opinion is based upon long experience and a wide knowledge of the Records and has always proved reliable to my many clients. It does not, however, include copies of any prior patents that may exist, similar to yours.

Simply send your disclosure and I will report fully at once without charging you a single cent.

Record of Your Case

A well kept record of your invention, containing the following data, may, in the future, prove of the greatest value if your application should ever get into interference proceedings or your patent into an infringement suit, and in the meantime will prove handy for reference purposes. Do not tear this page out of the book.

Name of Invention: .....

Date when invention was first thought of: .....

Date of first sketch: .....

Date of first model: .....

Date when first disclosed to others: .....

Names of those seeing disclosure: .....
.....

Date of disclosure to attorney: .....

Date when application was signed: .....

Date of filing application: .....

Serial number of application: .....

Date of allowance: .....

Final government fee due: .....

Final government fee paid: .....

Date of Patent: .....

Number of Patent: .....

.....
(Your Signature.)

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Witnesses.

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